Note remarks

Test sheet

: 27.03.92 Edition : 02.92 Replaces : ISO-4113

Test oil

: 0 402 640 837 Combination no.

Injection pump

Pump designation : PE12P120A320LS7807

: 0 412 620 806 EP type number

Governor

Governor design. : RQ400/1065PA1024 : 0 421 801 634 Governer no.

Customer-spec, information Customer : MERCEDES-BENZ

: OM 444 LA Engine

1st version kW : 485.0 : 2130 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 019 assembly

Opentina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test lines

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 9.00...12.00

: 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7 Firing order

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 12

BASIC SETTING

rpm: 1065 1st speed

Rack travel in mm : 13.90...14.00

Del.guantity cm3/: 21.1...21.3

100 s: (20.8...21.6)

cm3 : 0.5 Spread

100 s: (0.9)

rpm : 400.02nd speed Rack travel in mm: 4.8...5.4 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8 Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1065 Speed Aneroid pressure h: 1000

Del.quantity : 271.0...216.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm: 20.0 Testina: 1st rack travel in: 12.90 Speed rpm : 1110...1125 2nd rack travel in: 4.00 rpm : 1210...1240 Speed 4th rack travel in: 1300 rom : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring nom Rack travel in mm: 5.1 Testing: rpm : 300 Speed Minimum rack trave: 6.90 rpm : 400 Speed Rack travel in mm : 4.80...5.40 Rack travel in mm : 2.00 Speed rom : 460...500 Aneroid/Altitude Compensator Test 1st version Settina : 600 Speed rom hPa : -Pressure : 10.80...11.10 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 11.50...11.70 2nd pressure hPa : 500 Rack travel in m: 12.80...13.00 START CUT-OUT 1/min: 320 (340) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed rpm : 600 Del.quantity cm3/: 205.0...209.0 1000 s: (202.0...212.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm

Del.quantity cm3/: 144.0...146.0

1000 s: (141.0...149.0)

Spread cm3: 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.90
Speed rpm: 1110...1125

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 210.0...230.0 1000 s: (206.0...234.0)

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APPLICATION

Remarks:

Rail car

AO2

Note remarks

: MB 9,6 q 1 : 20.03.92 Test sheet Edition : 02.92 Replaces

: ISO-4113 Test oil

Combination no. : 0 402 646 940

Injection pump

Pump designation : PE6P120A320LS7836

EP type number : 0 412 626 840

Governor

Governor design. : RQ300/950PA971-7 : 0 421 801 580 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: OM401 LA Engine

1st version kW : 200.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina .

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00

: 6-3-5-2-4-1 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 12.40...12.60

Del.guantity cm3/: 18.2...18.4

100 s: (17.9...18.7)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 5.3...5.9

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 182.0...184.0 1000 : (179.0...187.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Rack travel in mm: 20.0

1st rack travel in: 12.10 rpm : 990...1005 2nd rack travel in: 4.00 Speed rpm : 1065...1095 4th rack travel in: 1200 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm : 5.6 Testing: Speed : 200 rpm Minimum rack trave: 7.40 rpm : 300 Speed Rack travel in mm : 5.30...5.90 Rack travel in mm : 2.00 : 370...410 Speed rom Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 600 hPa : 800 Pressure : 12.40...12.60 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 250 Rack travel in m: 10.90...11.10 2nd pressure hPa : 400 Rack travel in m: 11.80...12.00 3rd pressure hPa : 1000 Rack travel in m: 12.60...12.80 4th pressure hPa : 1150
Rack travel in m: 12.90...13.10 5th pressure hPa : -Rack travel in m: 10.30...10.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 Speed rpm : 950
Del.quantity cm3/: 203.0...206.0
1000 s: (200.0...209.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1400 rpm : 800 Speed Del.quantity cm3/: 202.0...206.0 1000 s: (199.0...209.0) full load rack tr: 12.10 Speed rpm : 990...1005

STARTING FUEL DELIVERY

.

Remarks:

AC4

Testing:

Note remarks

: MB 9,6 o 5 Test sheet : 27.03.92 Edition : 09.91 Replaces : ISO-4113 Test oil

: 0 402 646 955 Combination no.

Injection pump

Pump designation: PE6P120A320LS7834-1

EP type number : 0 412 626 857

Governor

: RQV350...1050PA866 Governor design.

-13

: 0 421 813 954 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M401 LA Enaine

: 230.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 : (5.45...5.65) Prestroke mm

Rack travel in mm : 20.00...21.00

: 6-3-5-2-4-1 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.60...14.80

Del.guantity cm3/: 22.2...22.4

100 s: (21.9...22.7)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.1...5.7 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5) cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

Spread

1st speed rpm : 350

: 1.40...1.60 travel mm

4th speed rpm : 1200

: 8.50...9.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1130 Speed

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 900

: 222.0...224.0 Del.quantity

1000 : (219.0...227.0)

Spread cm3 : 5.001000 : (9.00) RATED SPEED 1st version Control lever position degrees: 117...125 Testina: 1st rack travel in: 13.70 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 Speed rpm : 1160...1190 4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 63...71 Testina: Speed : 200 riom. Minimum rack trave: 7.30 : 350 rom Rack travel in mm : 5.10...5.70 CONSTANT REGULATION rpm : 350...600 Speed TORQUE CONTROL : 1050 2nd speed rom Rack travel in m: 14.80...15.00 3rd speed rpm : 800 Rack travel in m: 15.20...15.40 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rom hPa : 900 Pressure : 14.60...14.80 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 11.40...11.60 2nd pressure hPa : 600 Rack travel in m: 13.40...13.60 3rd pressure hPa : 1350 Rack travel in m: 14.70...14.90 \* 4th pressure hPa : -Rack travel in m: 10.00...10.30

1/min: 270 (290) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1800 rpm : 1050 Speed Del.quantity cm3/: 234.0...237.0 1000 s: (231.0...240.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1800 : 800 Speed rpm Del.quantity cm3/: 241.0...245.0 1000 s: (238.0...248.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1800 : 1050 Speed rpm Del.quantity cm3/: 175.0...179.0 \* 1000 s: (172.0...182.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) cm3 : 8.00Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.70 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 250.0...270.0 1000 s: (246.0...274.0) Remarks: \* = Set at reduced-delivery stop.

\* Increase in control-rod travel with

respect to setting at least 0.1 mm

Note remarks

: MB 9,6 o 7 : 27.03.92 Test sheet Edition : 10.91 Replaces Test oil : ISO-4113

: 0 402 646 961 Combination no.

Injection pump

Pump designation : PE6P120A320LS7834-1 : 0 412 626 857 EP type number

Governor

Governor design. : RQV350...950PA866-14

: 0 421 813 959 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M401 LA Engine

: 213.0 1st version kW Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00X2.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.55)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.30...14.50

Del.quantity cm3/: 20.9...21.1

100 s: (20.6...21.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.0 2nd speed Rack travel in mm : 5.6...6.2 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 1.30...1.80 travel mm : 424 2nd speed rpm

2.30...2.80 travel mm

: 700 3rd speed rom

: 4.10...4.60 travel mm

: 1008 4th speed rpm

: 7.90...8.40 travel mm

: 1220 5th speed rom

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 985 Speed

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version FUEL DELIVERY CHARACTERISTICS rpm : 600 Speed Aneroid pressure h: 900 : 209.0...211.0 Del.quantity 1000 : (206.0...214.0) 1st version Aneroid pressure h: 1600 : 5.00 Spread cm3 1000 : (9.00) : 950 Speed rpm Del.quantity cm3/: 228.0...231.0 1000 s: (225.0...234.0) RATED SPEED cm3 : 8.00 Spread 1000 s: (12.0) 1st version Aneroid pressure h: 1600 Control lever position degrees: 111...119 : 800 Speed rpm Del.quantity cm3/: 230.0...234.0 1000 s: (227.0...237.0) Testing: cm3 : 8.00 1st rack travel in: 13.80 Spread 1000 s: (12.0) rpm : 990...1000 Aneroid pressure h: 1600 2nd rack travel in: 4.00 Speed rpm: 950
Del.quantity cm3/: 169.0...173.0 \*
1000 s: (166.0...176.0) rpm : 1065...1095 Speed 4th rack travel in: 1250 rpm : 0.00...1.00 Speed cm3 : 3.00 1000 s: (12.0) Spread LOW IDLE 1 Aneroid pressure h: -Control lever Speed rpm : 500 Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) position degrees: 63...71 Testina: cm3 : 8.00 Spread Speed : 200 LDW 1000 s: (12.0) Minimum rack trave: 7.30 rom Rack travel in mm : 5.10...5.70 BREAKAWAY CONSTANT REGULATION rpm : 350...600 1st version Speed 1mm rack travel less than Aneroid/Altitude full load rack tr: 13.80 Compensator Test rpm : 990...1000 Speed STARTING FUEL DELIVERY 1st version Setting : 600 Speed rpm rpm : 100 hPa : 900 Pressure Speed Del.quantity cm3/: 240.0...260.0 1000 s: (236.0...264.0) : 13.30...13.50 Rack travel mm Measurement Remarks: 1/min: 600 Speed 1st pressure hPa : 300 \* = Set at reduced-delivery stop. Rack travel in m: 9.80...10.00 2nd pressure hPa : 550 Rack travel in m: 12.30...12.50 3rd pressure hPa : 1300 Rack travel in m: 13.70...13.90 4th pressure hPa : -Rack travel in m: 9.90...10.20 START CUT-OUT 1/min: 270 (290) Speed

**80A** 

# BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet Edition : MB 9,6 o 8 : 27.03.92 • 01.92

Replaces Test oil	: 01.92 : ISO-4113
Combination no.	: 0 402 646 965
Injection pump Pump designation EP type number Governor	: PE6P120A320LS7834-1 : 0 412 626 857
Governor design.	: RQV3501050PA866 -19
Governer no.	: 0 421 813 979
Customer—spec. in Customer	formation : MERCEDES-BENZ
Engine	: 0M401 LA, Euro 1
1st version kW Rated speed	: 213.0 : 2100
TEST BENCH REQUIR	EMENTS
Test oil inlet temp. °C	: 3842
Overflow valve	: 1 419 992 198
Inlet press., bar	: 1.50
Overflow quantity min. 1/	h: 100120
Test nozzle holde assembly	er : 1 688 901 105
Opening pressure, bar	: 207210
Orifice plate diameter mm	: 0,8
Test lines	: 1 680 750 075
Outside diameter x Wall thickness x Length mm	: 8.00x2.50x1000

BEGINNING OF DELIVERY Test pressure, bar: 2527
Prestroke mm : 5.505.60
: (5.455.55)  Rack travel in mm : 20.0021.00  Firing order : 6-3-5-2-4-1
Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 6
BASIC SETTING
1st speed rpm: 600
Rack travel in mm : 14.1014.30
Del.quantity cm3/: 20.720.9
100 s: (20.421.2)
Spread cm3 : 0.5
100 s: (0.9)
2nd speed rpm : 350.0 Rack travel in mm : 5.46.0 Del.quantity cm3/ : 1.62.2 100 s: (1.32.5) Spread cm3 : 0.6 100 s: (1.0)
(B) Setting of injection pump with governor
GUIDE SLEEVE TRAVEL  1st speed
GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm : 1125 Rack travel in mm : 16.5018.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 600 Speed Aneroid pressure h: 900 : 207.0...209.0 Del.quantity 1000 : (204.0...212.0) : 5.00 Spread cm3: (9.00)1000 RATED SPEED 1st version Control Lever position degrees: 115...123 Testing: 1st rack travel in: 13.80 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1180...1210 Speed 4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 63...71 Testina: Speed : 200 rpm Minimum rack trave: 7.60 : 350 rom Rack travel in mm : 5.40...6.00 CONSTANT REGULATION rpm : 350...600 Speed Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rom hPa : 900 Pressure : 14.10...14.30 Rack travel mm Measurement  $1/\min : 600$ Speed 1st pressure hPa : 300 Rack travel in m: 10.90...11.10 2nd pressure hPa : 500 Rack travel in m: 12.80...13.00 3rd pressure hPa : 1350 Rack travel in m: 14.40...14.60 4th pressure hPa : -Rack travel in m: 10.20...10.50

FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1600 Speed : 1050 rpm Del.quantity cm3/: 225.0...228.0 1000 s: (222.0...231.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1600 : 800 Speed rpm Del.quantity cm3/: 226.0...230.0 1000 s: (223.0...233.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1600 : 1050 Speed rom Del.quantity cm3/: 169.0...173.0 \* 1000 s: (166.0...176.0) : 8.00 cm3Spread 1000 s: (12.0) Aneroid pressure h: : 500 Speed rpm Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) cm3 : 8.00Spread 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.80 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 240.0...260.0 1000 s: (236.0...264.0) Remarks: \* = Set at reduced-delivery stop.

1/min: 270 (290)

Speed

START CUT-OUT

## Note remarks

: MB 9,6 r 5 : 27.03.92 : 12.91 Test sheet Edition Replaces : ISO-4113 Test oil

: 0 402 646 966 Combination no.

Injection pump

Pump designation: PE6P120A320LS7836-1 : 0 412 626 860 EP type number

Governor

: RQV350...1050PA866 Governor design.

-20

: 0 421 813 980 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M401 LA, Euro 1 Engine

: 200.0 : 2100 1st version kW Rated speed

# TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

**Opening** 

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

: 1 680 750 075 Test Lines

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm : (5.45...5.55)

Rack travel in mm : 20.00...21.00 : 6-3-5-2-4-1 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 12.40...12.60

Del.guantity cm3/: 18.2...18.4

100 s: (17.9...18.7)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.6...6.2 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 1.30...1.80 travel mm

2nd speed

rpm : 570 : 3.30...3.80 travel mm

rpm : 900 3rd speed

: 5.40...5.90 travel mm rpm : 1107 4th speed

travel mm : 7.80...8.30

5th speed : 1204 rpm

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1125 Speed

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 600 Speed Aneroid pressure h: 800 : 182.0...184.0 Del.quantity 1000 : (179.0...187.0) : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 115...123 Testing: 1st rack travel in: 12.10 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1180...1210 Speed 4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 63...71 Testing: rpm : 200 Speed Minimum rack trave: 7.30 : 350 rpm Rack travel in mm : 5.10...5.70 CONSTANT REGULATION rpm : 350...600 Speed Aneroid/Altitude Compensator Test 1st version Settina : 600 Speed rom hPa : 800 Pressure : 12.40...12.60 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 200 Rack travel in m: 11.30...11.50 2nd pressure hPa : 1000 Rack travel in m: 12.60...12.80 3rd pressure hPa : -

Rack travel in m: 10.50...10.80

1/min: 270 (290)

1st version Speed Spread Speed rpm Spread Spread Spread **BREAKAWAY** 1st version Speed STARTING FUEL DELIVERY Speed rpm Remarks:

FUEL DELIVERY CHARACTERISTICS Aneroid pressure h: 1600 rpm : 1050 Del.quantity cm3/: 201.0...204.0 1000 s: (198.0...207.0) cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1600 : 800 Del.quantity cm3/: 202.0...206.0 1000 s: (199.0...209.0) cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1600 Speed rpm : 1050 Del.quantity cm3/ : 149.0...153.0 \* 1000 s: (146.0...157.0) cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) cm3 : 8.00 1000 s: (12.0)

1mm rack travel less than

full load rack tr: 12.10 rpm : 1090...1100

: 100 Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0)

\* = Set at reduced-delivery stop.

Speed

START CUT-OUT

Note remarks

: DAF Test sheet : 27.03.92 Edition : 02.92 Replaces : ISO-4113 Test oil

: 0 402 646 968 Combination no.

Injection pump

Pump designation : PE6P120A320RS7248 : 0 412 626 861 EP type number

Governor

Governor design. : RQV275...1150PA986

Governer no. : 0 421 813 920

Customer-spec. information Customer : DAF

: RS 222 L Engine

1st version kW : 222.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 120...140

Test nozzle holder

: 1 688 901 105 assembly

Opening.

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 089 Test Lines

Outside diameter

x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 14.00...15.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - \cdot : 0.50 (0.75)$ 

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 11.7...12.7 Difference \* CS : 2.25...3.75

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 18.4...18.6

100 s: (18.1...18.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 275.0 2nd speed

Rack travel in mm: 5.3...5.5 Del.quantity cm3/: 1.3...1.9

100 s: (1.0...2.2)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 275 1st speed

: 1.20...1.60 travel mm

rpm : 315 2nd speed

: 1.80...2.20 travel mm

rpm : 1205 3rd speed

: 8.10...8.50 travel mm

: 1340 4th speed rpm : 9.70...9.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1315

Speed

Rack travel in mm : 10.90...13.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 1000

Del.quantity : 184.0...189.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 115...123

Testina:

1st rack travel in: 11.20

rom : 1180...1190 Speed

2nd rack travel in: 4.00

Speed rpm : 1290...1320 4th rack travel in: 1450

rpm : 0.00...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 79...87

Testing:

: 175 Speed rom Minimum rack trave: 6.30 rpm : 275

Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

rpm : 315...365 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed rom hPa : 1000 Pressure

: 12.20...12.30 Rack travel mm

Measurement

Speed 1/min: 600

1st pressure hPa : -

Rack travel in m: 9.30...9.50

2nd pressure hPa : 420

Rack travel in m: 11.60...11.70
3rd pressure hPa : 240
Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/ : 120.0...122.0

1000 s: (117.0...125.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.20

rpm : 1180...1190 Speed

LOW IDLE

: 275 Speed וחמיז

Rack travel in mm : 4.60...4.80

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

Note remarks

Test sheet : DAF Edition : 27.03.92 : 02.92 Replaces : ISO-4113 Test oil

: 0 402 646 969 Combination no.

Injection pump

Pump designation : PE6P120A320RS7248Z

EP type number : 0 412 626 862

Governor

Governor design. : RQV275...1150PA986

: 0 421 813 920 Governer no.

Customer-spec, information : DAF Customer

: RS 200 L Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 120...140

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0.8 diameter mm

: 1 680 750 089 Test Lines

Outside diameter x Wall thickness

x Length mm

: 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (5.15...5.35) Prestroke mm

Rack travel in mm: 14.00...15.00 Firing order: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - \cdot : 0.50 (0.75)$ 

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 10.8...11.8

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 16.4...16.6

100 s: (16.1...16.9)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 275.0 Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 1.3...1.9 100 s: (1.0...2.2)

cm3 : 0.8

Spread 100 st (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 275 : 1.20...1.60 travel mm

rpm : 315 2nd speed

: 1.80...2.20 travel mm

rpm : 1205 3rd speed

: 8.10...8.50 travel mm

: 1340 4th speed riom

: 9.70...9.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1335 Speed

Rack travel in mm : 9.00...11.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1000

: 164.0...166.0 Del.quantity 1000 : (161.0...169.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testing:

1st rack travel in: 10.30

rpm : 1180...1190 2nd rack travel in: 4.00

Speed rpm : 1275...1305

4th rack travel in: 1450

rpm : 0.00...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 79...87

Testing:

Speed : 175 rom Minimum rack trave: 6.20 rpm : 275

Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

rpm : 315...365 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 600 rom Speed Pressure hPa : 1000

Rack travel mm : 11.30...11.40

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 9.10...9.30

2nd pressure hPa : 340 Rack travel in m: 10.70...10.80

3rd pressure hPa : 200

Rack travel in m: 9.60...9.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 600 Speed

Del.quantity cm3/: 115.0...117.0 1000 s: (112.0...120.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.30

rpm : 1180...1190 Speed

LOW IDLE

: 275 Speed rpm

Rack travel in mm : 4.60...4.80

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

Note remarks

: DAF Test sheet

: 27.03.92 Edition : 02.92 Replaces : ISO-4113 Test oil

: 0 402 646 970 Combination no.

Injection pump

Pump designation : PE6P120A320RS7248Y

EP type number : 0 412 626 863

Governor

Governor design. : RQV275...1150PA986

: 0 421 813 920 Governer no.

Customer-spec, information Customer : DAF

: RS 180 L Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 120...140

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

: 1 680 750 089 Test lines

Outside diameter

x Wall thickness

: 8.00X2.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35) Rack travel in mm : 14.00...15.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasina

Tolerance + - \* : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 % maximum rack tra: 10.2...11.2
Difference \* CS : 2.25...3.75

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 14.5...14.7

100 s: (14.2...15.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 5.3...5.5
Del.quantity cm3/ : 1.3...1.9

100 s: (1.0...2.2) cm3 : 0.8

Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275 : 1.20...1.60 travel mm

rpm : 315 2nd speed

: 1.80...2.20 travel mm

rpm : 1205 3rd speed

: 8.10...8.50 travel mm

rpm : 1340 4th speed

: 9.70...9.90 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1330 Speed

Rack travel in mm : 9.40...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 1000

: 145.5...147.5 Del. quantity 1000 : (142.5...150.5)

Spread

cm3 : 5.00 1000 : (9.03)

RATED SPEED

1st version Control Lever

position degrees: 116...124

Testing:

1st rack travel in: 9.70

rpm : 1180...1190 Speed

2nd rack travel in: 4.00

rpm : 1265...1295 Speed

4th rack travel in: 1450

rpm : 0.00...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 79...87

Testing:

Speed rom : 175 Minimum rack trave: 6.20 : 275 rpm

Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

rpm : 315...365 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 600 Speed MCT hPa : 1000 Pressure

Rack travel mm : 10.70...10.80

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 8.80...9.00 2nd pressure hPa : 250

Rack travel in m: 10.20...10.30

3rd pressure hPa : 140

Rack travel in m: 9.40...9.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 600 Speed

Del.quantity cm3/: 107.0...109.0 1000 s: (104.0...112.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.70

rpm : 1180...1190 Speed

LOW IDLE

Speed : 275 rpm

Rack travel in mm : 4.60...4.80

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

Note remarks

Test sheet : DAF : 27.03.92 Edition : 02.92 Replaces : ISO-4113 Test oil

: 0 402 646 971 Combination no.

Injection pump

Pump designation : PE6P12OA32ORS7218Z : 0 412 626 847

EP type number Governor

Governor design. : RQV275...1000PA939-2

: 0 421 813 986 Governer no.

Customer-spec. information : DAF Customer

: WS 242 L Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 95...115

Test nozzie holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

: 1 680 750 089 Test lines

Outside diameter

x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.30...5.40 Prestroke mm

: (5.25...5.45)

Rack travel in mm : 14.00...15.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 13.5...14.5 Difference CS : 2.25...3.75

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 20.5...20.7

100 s: (20.2...21.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 275.0 2nd speed Rack travel in mm: 6.1...6.3 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1045 1st speed : 7.70...8.20 travel mm

rpm : 275 2nd speed

: 1.10...1.60 travel mm rpm : 380 3rd speed

: 2.40...2.90 travel mm

rpm : 675 4th speed

: 4.20...4.70 travel mm

: 1310 5th speed rpm

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

> Degree: -1 rpm : 1130

Speed Rack travel in mm : 12.60...15.20 FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed Aneroid pressure h: 1000

Del.quantity : 205.0...207.0

1000 ; (202.0...210.0)

: 5.00 cm3 Spread 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 115...123

Testing:

1st rack travel in: 12.80

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

Speed rpm : 1145...1175

4th rack travel in: 1250

rpm : 0.00...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 78...86

Testing:

: 175 Speed rpm Minimum rack trave: 6.50 : 275 **PPM** 

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

: 300...350 Speed rpm

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed rpm hPa : 1000 Pressure

Rack travel mm : 13.80...13.90

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 11.70...11.90

2nd pressure hPa : 420

Rack travel in m: 13.30...13.40 3rd pressure hPa : 260 Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 600 Speed

Del.quantity cm3/: 147.0...149.0 1000 s: (144.0...152.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80

rpm : 1040...1050 Speed

LOW IDLE

: 275 Speed rpm

Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

BEGINNING OF DELIVERY BOSCH TNJ. PLMP TEST SPECIFICATIONS Test pressure, bar: 25...27 Note remarks : 5.30...5.40 Prestroke mm : (5.25...5.45) Test sheet : DAF : 27.03.92 Rack travel in mm : 14.30...15.30 Firing order : 1-5-3-6-2-4 Edition : 02.92 Firing order Replaces : ISO-4113 Test oil : 0 402 646 972 Combination no. : 0-60-120-130-240-300 Phasing Injection pump : 0.50 (0.75) Pump designation : PE6P12OA32ORS7218 Tolerance + - ° : 0 412 626 839 EP type number Time to cyl. no. : 1 Governor Governor design. : PQV275...1000PA939-2 BEGINNING OF DELIVERY DIFFERENCE : 0 421 813 986 Governer no. betw. rack trav. m: 4.90...5.10 Customer-spec. information & maximum rack tra: 14.5...15.5 Difference ° CS : 2.25...3.75 Customer : DAF : WS 268 L Engine BASIC SETTING : 268.0 1st version kW rpm: 850 : 2000 1st speed Rated speed Rack travel in mm : 14.80...14.90 TEST BENCH REQUIREMENTS Del.quantity cm3/: 23.0...23.2 Test oil inlet temp. °C : 38...42 100 s: (22.7...23.5) Overflow valve cm3 : 0.5: 1 419 992 198 Spread 100 s: (0.9) Inlet press., bar: 1.50 rpm : 275.0 Overflow 2nd speed Rack travel in min: 6.1...6.3 quantity min. 1/h: 95...115 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3) Test nozzle holder : 1 688 901 105 cm3 : 0.8 Spread assembly 100 s: (1.2) Openina (B) Setting of injection pump : 207...210 pressure, bar with governor Orifice plate GUIDE SLEEVE TRAVEL : 0,8 diameter mm 1st speed rpm : 1045 : 7.7G...8.20 travel mm rpm : 275 : 1 680 750 089 2nd speed Test lines : 1.10...1.60 travel mm rpm : 380 3rd speed Outside diameter 2.40...2.90 travel mm x Wall thickness rpm : 675 : 4.20...4.70 : 8.00X2.50X600 x Length mm 4th speed

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

GUIDE SLEEVE POSITION Control-lever position

rpm : 1310

: 11.00...12.00

travel mm

travel mm

5th speed

Degree: -1

Speed rpm : 1125 Rack travel in mm : 13.60...16.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 850 Aneroid pressure h: 1000

Del.quantity : 230.0...235.0)

cm3 : 5.00 Spread 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 116...124

Testing:

1st rack travel in: 13.80

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1150...1180 Speed

4th rack travel in: 1250

rpm : 0.00...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 78...86

Testing:

Speed rpm Minimum rack trave: 6.50 rpm : 275

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

rpm : 300...350 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed man hPa : 1000 Pressure

: 14.80...14.90 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 12.20...12.40

2nd pressure hPa : 490

Rack travel in m: 14.20...14.30 3rd pressure hPa : 280 Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed rpm : 600

Del.quantity cm3/: 158.0...160.0 1000 s: (155.0...163.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80

rpm : 1040...1050 Speed

LOW IDLE

Speed rpm : 275 Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

Note remarks

Test sheet : DAF ; 27.03.92 Edition : 02.92 Replaces : ISO-4113 Test oil

Combination no. : 0 402 646 973

Injection pump

Pump designation : PE6P120A320RS7218Z

EP type number : 0 412 626 847

Governor

Governor design. : RQ275/1000PA936-2

: 0 421 801 633 Governer no.

Customer-spec. information Customer : DAF

: WS 242 L Engine

1st version kW : 268.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening.

pressure, bar : 207...210

Test Lines : 1 680 750 089

Outside diameter x Wall thickness

: 8.00x2,50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 5.30...5.40 Prestroke min

: (5.25...5.45)

Rack travel in mm : 14.00...15.00

Firing order : 1-5-3-6-2-4

Firing order

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 13.5...14.55 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm: 850

Rack travel in mm: 13.80...13.90

Del.quantity cm3/: 20.5...20.7

100 s: (20.2...21.0)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 275.0 2nd speed

Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 550 Rack travel in mm: 15.60...16.40

FULL LOAD DELTY. AT FULL LOAD STOP

1st version

Speed rpm : 850 Aneroid pressure h: 1000

205.0...207.0 1000 : (202.0...210.0) Del.quantity

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 550 rpm Speed Rack travel in mm: 16.0

Testina:

1st rack travel in: 12.80 Speed rpm: 1035...1050 2nd rack travel in: 4.00

rpm : 1120...1150 Speed

4th rack travel in: 1250

rpm : 0.00...1.40 Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 275 Rack travel in mm : 5.0

Testina:

Speed rpm : 175 Minimum rack trave: 6.50 rpm : 275

Rack travel in mm : 4.90...5.10

Rack travel in mm : 2.00

rpm : 330...370 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 14.80...14.90 2nd speed rpm : 1000

Rack travel in m: 14.70...14.90

Aneroid/Altitude

Compensator Test

1st version

Setting

: 600 Speed nom hPa : 1000 Pressure

Rack travel mm : 13.80...13.90

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 11.70...11.90

2nd pressure hPa : 420

Rack travel in m: 13.30...13.40

3rd pressure hPa : 260

Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 600 Speed

Del.quantity cm3/: 147.0...149.0 1000 s: (144.0...152.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 12.80

rpm : 1035...1050 Speed

LOW IDLE

: 275 Speed rpm

Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

Note remarks

: DAF Test sheet

: 27.03.92 Edition : 02.92 Replaces

: ISO-4113 Test oil

: 0 402 646 974 Combination no.

Injection pump

Pump designation : PE6Pi20A320RS7218

EP type number : 0 412 626 839

Governor

Governor design. : RQ275/1000PA936-2

: 0 421 801 633 Governer no.

Customer-spec. information

: DAF Customer

: WS 268 L Engine

1st version kW : 268.0

: 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

**Overflow** 

quantity min. 1/h: 95...115

Test nozzle holder

: 1 688 901 105 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 089 Test Lines

Outside diameter

x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.30...5.40 Prestroke mm

: (5.25...5.45)

Rack travel in mm: 14.50...15.50

Firing order: 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ}$  : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 14.5...15.5 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm: 850

Rack travel in mm: 14.80...14.90

Del.quantity cm3/: 23.0...23.2

100 s: (22.7...23.5)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 275.0 2nd speed

Rack travel in mm: 6.1...6.3

Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 Speed rpm: 550 Rack travel in mm: 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed Aneroid pressure h: 1000

: 230.0...232.0 Del.quantity

1000 : (227.0...235.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 550 rpm Rack travel in mm: 16.0

Testing:

1st rack travel in: 13.80 Speed rpm : 1035...1050

2nd rack travel in: 4.00

rpm : 1140...1170 Speed

4th rack travel in: 1250

rpm : 0.00...1.40 Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm Rack travel in mm: 5.0

Testing:

rpm Speed : 175

Minimum rack trave: 6.50

Speed rpm : 275 Rack travel in mm : 4.90...5.10

Rack travel in mm : 2.00 Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 15.30...15.40

2nd speed rpm : 1000

Rack travel in m: 15.20...15.40

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed (non) hPa : 1000 Pressure

: 14.80...14.90 Rack travel mm

Measurement

Speed 1/min: 600

1st pressure hPa : -

Rack travel in m: 12.20...12.40

2nd pressure hPa : 490

Rack travel in m: 14.20...14.30

3rd pressure hPa : 280

Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 600 Speed

Del.quantity cm3/: 158.0...160.0 1000 s: (155.0...163.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80

rpm : 1035...1050 Speed

LOW IDLE

Speed rpm : 275 Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

Note remarks

: DAF Test sheet

: 13.03.92 Edition

Replaces

: ISO-4113 Test oil

: 0 402 646 984 Combination no.

Injection pump

Pump designation : PE6P120A320RS7248 : 0 412 626 861

EP type number Governor

Governor design. : RQ275/1150PA987

Governer no.

: 0 421 801 578

Customer-spec. information : DAF Customer

: RS 222 L Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 638 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mn : 0,8

: 1 680 750 089 Test Lines

Outside diameter

x Wall thickness : 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 14.00...15.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 11.7...12.7 Difference ° CS : 2.25...3.75

BASIC SETTING

rom : 1000 1st speed

Rack travel in mm : 12.20...12.30

Del.guantity cm3/: 18.4...18.6

100 s: (18.1...18.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 275.0 2nd speed

Rack travel in mm: 5.3...5.5 Del.quantity cm3/: 1.3...1.9

100 s: (1.0...2.2) cm3 : 0.8

Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 550 Rack travel in mm: 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 1000

: 184.0...186.0 Del.quantity

1000 : (181.0...189.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed Rack travel in mm: 16.0 Testing:

1st rack travel in: 11.20 Speed rpm : 1175...1190

2nd rack travel in: 4.00

rpm : 1255...1285 Speed

4th rack travel in: 1450

rpm : 0.00...1.40 Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 275 Rack travel in mm: 4.7

Testing:

rpm : 100 Speed Minimum rack trave: 6.20

: 275 rpm

Rack travel in mm: 4.60...4.80 Rack travel in mm: 2.00

rpm : 320...360 Speed

TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 13.20...13.30 2nd speed rpm : 1150 Rack travel in m: 13.10...13.30

Aneroid/Altitude Compensator Test

1st version Setting

: 600 Speed rpm

Pressure hPa : 1000

Rack travel mm : 12.20...12.30

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 9.50...9.70
2nd pressure hPa : 420
Rack travel in m: 11.60...11.70
3rd pressure hPa : 240

Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 600 Speed

Del.quantity cm3/: 120.0...122.0 1000 s: (117.0...125.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20

rpm : 1175...1190 Speed

LOW IDLE

: 275 Speed rpm

Rack travel in mm : 4.60...4.80

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

Note remarks

Test sheet : DAF

Edition : 13.03.92

Replaces

: ISO-4113 Test oil

: 0 402 646 985 Combination no.

Injection pump

Pump designation: PE6P120A320RS7248Z

EP type number : 0 412 626 862

Governor

Governor design. : RQ275/1150PA987

: 0 421 801 578 Governer no.

Customer-spec. information : DAF Customer

: RS 200 L Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 089 Test lines

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35) Rack travel in mm: 14.00...15.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 10.8...11.8
Difference \* CS : 3.25...4.75

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm: 11.30...11.40

Del.quantity cm3/: 16.4...16.6

100 s: (16.1...16.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 275.0 2nd speed

Rack travel in mm: 5.3...5.5

Del.quantity cm3/: 1.3...1.9 100 s: (1.0...2.2)

cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm: 550 Rack travel in mm: 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

Aneroid pressure h: 1000

: 164.0...166.0 Del.quantity 1000 : (161.0...169.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 16.0

B01

Testing:

1st rack travel in: 10.30

rpm : 1175...1190

2nd rack travel in: 4.00

rpm : 1245...1275 Speed

4th rack travel in: 1450

rpm : 0.00...1.40 Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 275 Rack travel in mm: 4.7

Testing:

: 100 Speed rpm Minimum rack trave: 6.20 : 275 rom

Rack travel in mm : 4.60...4.80

Rack travel in mm: 2.00 rpm : 320...360Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 12.30...12.40

2nd speed rpm : 1150 Rack travel in m: 12.20...12.40

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed man hPa : 1000 Pressure

Rack travel mm : 11.30...11.40

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 9.00...9.20

2nd pressure hPa : 340

Rack travel in m: 10.70...10.80 3rd pressure hPa : 200

Rack travel in m: 9.60...9.80

FUFL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 600

Del.quantity cm3/: 115.0...117.0

1000 s: (112.0...120.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.30

rpm : 1175...1190 Speed

LOW IDLE

: 275 Speed rpm

Rack travel in mm : 4.60...4.80

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

Note remarks

Test sheet

: DAF

Edition

: 13.03.92

Replaces

Test oil

: ISO-4113

Combination no.

: 0 402 646 986

Injection pump

Pump designation : PE6P12DA32ORS7248Y

EP type number

: 0 412 626 863

Governor

Governor design. : RQ275/1150PA987

Governer no.

: 0 421 801 578

Customer-spec. information

Customer

: DAF

Engine

: RS 180 L

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening |

pressure, bar

: 207...210

Orifice plate

diameter mm : 0,8

Test lines

: 1 680 750 089

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30

(5.15...5.35)

Rack travel in mm: 14.00...15.00

: 1-5-3-6-2-4 Firing order

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10

& maximum rack tra: 10.2...11.2 Difference ° CS : 3.25...4.75

BASIC SETTING

1st speed

Spread

rpm : 1000

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 14.5...14.7

100 s: (14.2...15.0)

cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0 Rack travel in mm : 5.3...5.5

Del.quantity cm3/: 1.3...1.9 100 s: (1.0...2.2)

cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

Speed rpm : 550 Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1000

Aneroid pressure h: 1000

Del.quantity

: 145.5...147.5 1000 : (142.5...150.5)

Spread cm3

: 5.00

: (9.00) 1000

RATED SPEED

1st version

Speed

Setting point:

Rack travel in mm: 16.0

Testina:

1st rack travel in: 9.70

rpm : 1175...1190 Speed

2nd rack travel in: 4.00

Speed rpm : 1240...1270 4th rack travel in: 1450

Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring

rpm : 275 Rack travel in mm: 4.7

Testing:

Speed rpm Minimum rack trave: 6.20

Speed rpm : 275 Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00

: 320...360 Speed rom

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rom : 1000

Rack travel in m: 11.70...11.80

2nd speed rpm : 1150

Rack travel in m: 11.60...11.80

Ameroid/Altitude Compensator Test

1st version

Setting

: 600 Speed rom hPa : 1000 Pressure

: 10.70...10.80 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 8.80...9.00

2nd pressure hPa : 250

Rack travel in m: 10.20...10.30 3rd pressure hPa : 140

Rack travel in m: 9.40...9.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/: 107.0...109.0

1000 s: (104.0...113.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 9.70

rpm : 1175...1190 Speed

LOW IDLE

: 275 Speed rpm

Rack travel in mm : 4.60...4.80

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

Note remarks

Test sheet Edition : UNI

: 03.04.92

Replaces

: ISO-4113 Test oil

Combination no. : 0 402-646 990

Injection pump

Pump designation : PE6P130A720RS7225

: 0 412 636 817 EP type number

Governor

Governor design. : RQV300...950PA975-2K

: 0 421 815 310 Governer no.

Customer-spec. information : IVECO-UNIC Customer

: 8210.42.369 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

**Opening** 

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm: 11.50...12.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 950

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 25.2...25.4

100 s: (24.9...25.7)

cm3 : 0.6Spread

100 s: (1.0)

rpm : 300.02nd speed

Rack travel in mm: 4.1...4.5 Del.quantity cm3/: 1.9...2.5 100 s: (1.5...2.9)

Spread cm3 : 1.0100 s: (1.4)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 995 1st speed

: 8.40...8.60 travel mm

rpm : 300 2nd speed

: 1.00...1.40 travel mm

rpm : 500 3rd speed

: 3.30...3.90 travel mm

rpm : 700 4th speed

: 5.40...5.80 travel mm

rpm : 1400 5th speed

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1175 Speed

Rack travel in mm : 9.70...12.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 950 Speed

Aneroid pressure h: 1000

Del.quantity : 232.0...257.0)

cm3 : 6.00 1000 : (10.00) Spread RATED SPEED 1st version Control Lever

position degrees: 109...117

Testina: 1st rack travel in: 10.90 rpm : 990...1000 Speed 2nd rack travel in: 4.00 rpm : 1080...1110 Speed 4th rack travel in: 1200 rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever position degrees: 61...69

Testing: : 100 Speed rom Minimum rack trave: 5.80 rpm : 300

Rack travel in mm : 4.20...4.40

CONSTANT REGULATION rpm : 340...460 Speed

TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version rpm : 950 1st speed Rack travel in m: 11.90...12.00 rpm : 350 2nd speed Rack travel in m: 11.30...11.50 3rd speed rpm : 700

Rack travel in m: 11.90...12.00 th speed rpm : 550 Rack travel in m: 11.70...11.90 4th speed rpm

Aneroid/Altitude Compensator Test

1st version Setting : 950 Speed rpm hPa : 1000 Pressure

: 11.90...12.00 Rack travel mm

Measurement Speed 1/min: 950

1st pressure hPa : -Rack travel in m: 9.50...9.70 2nd pressure hPa : 600 Rack travel in m: 10.80...10.90

3rd pressure hPa : 500

Rack travel in m: 10.00...10.20

START CUT-OUT

1/min: 240 (260) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 rpm : 700 Speed

Del.quantity cm3/: 259.0...265.0 1000 s: (259.0...265.0)

Aneroid pressure h: 1000 Speed וחכות

Del.quantity cm3/: 261.0...267.0 1000 s: (258.0...270.0)

Aneroid pressure h: rpm : 550 Speed

Del.quantity cm3/: 186.0...188.0 1000 s: (186.0...188.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.90 rpm : 990...1000 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 145.0...175.0 1000 s: (141.0...179.0)

LOW IDLE

rpm : 300 Speed Rack travel in mm : 4.10...4.50 Del.quantity cm3/: 19.0...25.0 1000 s: (15.0...29.0)

cm3 : 10.00 Spread 1000 s: (14.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Note remarks

Test sheet

: DAF

Edition

: 13.03.92

Replaces

Test oil

: ISO-4113

Combination no. : 0 402 646 991

Injection pump

Pump designation : PE6P120A320RS7218Y

EP type number

: 0 412 626 859

Governor

Governor design. : RQV275...1000PA939-2

Governer no.

: 0 421 813 986

Customer-spec. information Customer

: DAF

Engine

: WS 222 L

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 105

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 089

Outside diameter

x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.30...5.40 : (5.25...5.45) Prestroke mm

Rack travel in mm: 14.00...15.00

: 1-5-3-6-2-4 Firing order

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10

& maximum rack tra: 13.2...14.2 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed

rpm: 850

Rack travel in mm : 13.70...13.80

Del.quantity cm3/: 19.5...19.7

100 s: (19.2...20.0)

Spread

cm3 : 0.5

100 s: (0.9)

rpm : 275.0 2nd speed

Rack travel in mm : 6.3...6.5 Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8 Spread

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1045 1st speed

: 7.70...8.20 rpm : 275 travel mm

2nd speed

: 1.10...1.60 travel mm

rpm : 380 3rd speed

: 2.40...2.90 travel mm

rpm : 675 4th speed

: 4.20...4.70 travel mm

1310 5th speed rpm

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1150

Speed

Rack travel in mm : 11.40...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed Aneroid pressure h: 1000

: 195.0...197.0 Del.quantity 1000 : (192.0...200.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 115...123

Testing:

1st rack travel in: 12.70

rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1140...1170

4th rack travel in: 1250

Speed rpm : 0.00...1.40

LOW IDLE 1 Control lever

position degrees: 78...86

Testing:

Speed : 100 rpm Minimum rack trave: 6.50 rpm : 275

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

rpm : 300...350 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed MCT hPa : 1000 Pressure

: 13.70...13.80 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 11.50...11.70

2nd pressure hPa : 400

Rack travel in m: 13.20...13.30 3rd pressure hPa : 230

Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 600 Speed

Del.quantity cm3/: 139.0...141.0 1000 s: (136.0...144.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 12.70

rpm : 1040...1050 Speed

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

#### Note remarks

: MB 14,7 e 3 Test sheet : 27.03.92 Edition : 11.91 Replaces : ISO-4113 Test oil

: 0 402 648 831 Combination no.

Injection pump

Pump designation: PE8P120A320LS7801-1 : 0 412 628 818

EP type number

Governor

Governor design. : RQV350...1050PA842-7

: 0 421 813 874 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M442 LA Engine

: 320.0 : 2100 1st version kW Rated speed

# TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test lines

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-Phasina

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

#### BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 14.50...14.70

Del.quantity cm3/: 21.2...21.4

100 s: (20.9...21.7)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.7...5.9

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

(B) Setting of injection pump with governor

#### GUIDE SLEEVE TRAVEL

1st speed rpm : 350

: 0.80...1.20 travel mm

rpm : 510 2nd speed

: 3.60...4.10 rpm : 1100 travel mm

3rd speed

: 7.80...8.40 travel mm

rpm : 1270 4th speed

: 11.00...12.00 travel mm

# GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1125

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

4th pressure hPa : 1250 Rack travel in m: 15.50...15.70 rpm : 600 Speed Aneroid pressure h: 750 : 212.0...214.0 5th pressure hPa : -Dei.quantity Rack travel in m: 11.60...11.80 1000 : (209.0...217.0) : 5.00 cm3 Spread 1000 : (9.00) START CUT-OUT 1/min: 270 (290) RATED SPEED Speed 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 64...72 1st version Testing: Aneroid pressure h: 1250 Speed rpm: 1050 Del.quantity cm3/: 221.0...224.0 1st rack travel in: 14.20 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 1000 s: (218.0...227.0) cm3 : 8.00 Spread rpm : 1160...1190 Speed 1000 s: (12.0) 4th rack travel in: 1300 rom : 0.00...1.50Aneroid pressure h: 1250 Speed rpm : 900 Speed Del.quantity cm3/: 233.0...237.0 1000 s: (230.0...240.0) LOW IDLE 1 Control lever cm3 : 8.00 position degrees: 8...16 Spread 1000 s: (12.0) Aneroid pressure h: 1250 Testing: : 1050 Speed Speed rpm : 100 rpm Del.quantity cm3/: 154.0...157.0 1000 s: (151.0...160.0) Minimum rack trave: 7.40 rom cm3 : 8,00 Rack travel in mm : 5.50...6.10 Spread 1000 s: (12.0) CONSTANT REGULATION Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 147.0...149.0 1000 s: (144.0...152.0) rom : 350...550 Speed TORQUE CONTROL cm3 : 8.00 : 0.40 Spread Dimension a mm 1000 s: (12.0) 2nd speed rpm : 1050 Rack travel in m: 15.20...15.40 3rd speed rpm : 975 Rack travel in m: 15.60...15.80 **BREAKAWAY** 1st version Aneroid/Altitude 1mm rack travel less than Compensator Test full load rack tr: 14.20 rpm : 1090...1100 1st version Speed Setting STARTING FUEL DELIVERY : 600 Speed rpm hPa : 750 Pressure : 14.50...14.70 Rack travel mm Speed rpm : 100 Del.quantity cm3/: 240.0...260.0 1000 s: (236.0...264.0) Measurement 1/min: 600 Speed Remarks: 1st pressure hPa : 400 Rack travel in m: 12.20...12.40 . 2nd pressure hPa : 550 Rack travel in m: 13.60...13.80 3rd pressure hPa : 900 Rack travel in m: 14.70...14.80

Note remarks

Test sheet : SCA : 22.11.91 Edition

Replaces

: ISO-4113 Test oil

: 0 402 648 874 Combination no.

Injection pump

Pump designation : PE8P12DA92D/4LS7189

EP type number : 0 412 628 840

Governor

Governor design. : RQV200...950PA736-8

: D 421 813 815 Governer no.

Customer-spec. information : SCANIA Customer

: DSC14 10 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 104 assembly

Opening

: 250...253 pressure, bar

Orifice plate

: 0.7 diameter mm

: 1 680 750 008 Test Lines

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm : (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 1-2-7-3-4-5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 23.7...23.9

100 s: (23.4...24.2)

cm3 : 0.7Spread

100 s: (1.0)

rpm : 250.0 2nd speed Rack travel in mm: 4.4...4.8

Del.quantity cm3/: 1.2...1.6

100 s: (-)

cm3 : 0.3Spread 100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

: 1.40...1.80 travel mm

rpm : 350 2nd speed

: 2.30...2.90 travel mm

: 650 3rd speed rpm

: 4.40...5.00 travel mm

rpm : 995 4th speed

: 7.70...7.90 travel mm

rpm : 1115 5th speed

: 9.20...9.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1150 Speed

Rack travel in mm : 7.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 900

: 237.0...239.0 Del.quantity

1000 : (234.0...242.0)

cm3 : 7.00 1000 : (10.00) Spread

RATED SPEED

1st version Control lever

position degrees: 90...98

Testing:

1st rack travel in: 12.00 rpm : 990...1000 Speed

2nd rack travel in: 4.00

Speed rpm: 1100...1130 4th rack travel in: 1250

Speed nom : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 40...48

Testing:

Speed rpm : 100 Minimum rack trave: 5.00 rpm : 250

Rack travel in mm: 4.40...4.60 Rack travel in mm: 2.00 Speed rpm: 375...435

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rom hPa : 900 Pressure

Rack travel mm : 13.00...13.10

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 9.80...10.20

2nd pressure hPa : 525
Rack travel in m: 11.70...11.80
3rd pressure hPa : 320
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 500

Del.quantity cm3/: 142.0...146.0

1000 s: (140.0...148.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.00 rpm : 990...1000 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 130.0...180.0

1000 s: (-)

Rack travel in mm : 9.80...10.20

LOW IDLE

Speed rpm : 250

Rack travel in mm: 4.40...4.60

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Start-of-delivery setting with ROBO diaphragm.

# BOSCH INL. PUMP TEST SPECIFICATIONS Note remarks

: MB 12,8 o : 20.03.92 : 24.01.92 Test sheet Edition Replaces : ISO-4113 Test oil

Combination no. : 0 402 648 893

Injection pump

Pump designation : PE8P120A320LS7835 : 0 412 628 847 EP type number

Governor

Governor design. : RQ300/950PA971-2 : 0 421 801 548 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M402 A Engine

: 280.0 1st version kW : 1900 Rated speed

# TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening.

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

: 1 680 750 075 Test Lines

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-Phasing

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

# BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 14.10...14.30

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.9...6.5
Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed

Aneroid pressure h: 1000

: 225.0...227.0 Del.quantity 1000 : (222.0...230.0)

cm3 : 6.00 1000 : (9.00) Spread

RATED SPEED

1st version

Setting point:

rpm : 600 Speed

cm3 : 8.00Spread Rack travel in mm: 20.0 1000 s: (12.0) Aneroid pressure h: 1500 Testina: Speed rpm: 750
Del.quantity cm3/: 234.0...238.0
1000 s: (231.0...241.0) 1st rack travel in: 12.90 rpm : 990...1005 Speed 2nd rack travel in: 4.00 cm3 : 8.00Speed rpm : 1070...1100 Spread 1000 s: (12.0) 4th rack travel in: 1150 rom : 0.00...1.50 Aneroid pressure h: -Speed rpm : 500 Speed Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) LOW IDLE 1 Setting point w/out bumper spring : 300 cm3 : 8.00Spread rom 1000 s: (12.0) Rack travel in nm: 6.2 Testing: BREAKAWAY Speed rpm : 200 Minimum rack trave: 7.50 : 300 1st version rom Rack travel in mm : 5.90...6.50 Rack travel in mm : 2.00 1mm rack travel less than full load rack tr: 12.90 rpm : 380...420 Speed rpm : 990...1005 Speed TORQUE CONTROL : 0.50 STARTING FUEL DELIVERY Dimension a mm 2nd speed rpm : 950 Rack travel in m: 13.90...14.10 rpm : 100 3rd speed rpm : 800 Speed Del.quantity cm3/: 40.0...70.0 1000 s: (36.0...74.0) Rack travel in mm: 10.10...10.40 Rack travel in m: 14.70...14.90 Aneroid/Altitude Compensator Test rpm : 100 Del.quantity cm3/: 210...230 \*\* 1000 s: (200...240) 1st version Setting : 600 Remarks: Speed man: hPa : 1000 Pressure : 14.10...14.30 Rack travel mm \* Increase in control-rod travel with respect to setting at least 0.1 mm Measurement 1/min: 600 Speed 1st pressure hPa : 250 \*\* Value only applies to governor with Rack travel in m: 10.30...10.50 no TAS 2nd pressure hPa : 650 Rack travel in m: 13.10...13.30 3rd pressure hPa : 8120 Rack travel in m: 14.20...14.40 \* 4th pressure hPa : -Rack travel in m: 10.10...10.40 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 rpm : 950 Speed Del.quantity cm3/: 216.0...219.0 1000 s: (213.0...222.0)

Note remarks

: MB 12,8 o 1 : 20.03.92 Test sheet Edition : 01.92 Replaces : ISO-4113 Test oil

Combination no. : 0 402 648 894

Injection pump

Pump designation : PE8P120A320LS7835 EP type number : 0 412 628 847

Governor

: RQV300...950PA797-18 Governor design.

: 0 421 813 886 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M402 A Engine

: 280.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 638 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-Phasing

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

rpm: 630 1st speed

Rack travel in mm : 14.10...14.30

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 5.9...6.5 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread 100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.00...1.50 travel mm rpm : 567 2nd speed

: 4.40...4.90 travel mm

rpm : 780 3rd speed

: 6.10...6.60 travel mm

rpm : 1009 4th speed

: 8.30...8.80 travel mm

rpm : 1092 5th speed

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 980 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

rpm : 600 Speed Aneroid pressure h: 1000 : 225.0...227.0 Del.quantity 1000 : (222.0...230.0) : 6.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 122...130 Testing: 1st rack travel in: 12.90 rpm : 990...1000 Speed 2nd rack travel in: 4.00 Speed rpm: 1070...1100 4th rack travel in: 1250 rom : 0.00...1.50Speed LOW IDLE 1 Control lever position degrees: 80...88 Testing: Speed rpm -Minimum rack trave: 7.50 : 360 Speed rom Rack travel in mm : 5.90...6.50 CONSTANT REGULATION rpm : 250...360 Speed TORQUE CONTROL Dimension a mm : 0.50 nd speed rpm : 950 Rack travel in m: 13.90...14.10 2nd speed 3rd speed rpm : 800 Rack travel in m: 14.70...14.90 Aneroid/Altitude Compensator Test 1st version Setting Speed man : 600 hPa : 1000 Pressure Rack travel mm : 14.10...14.30 Measurement 1/min: 600 Speed 1st pressure hPa : 250 Rack travel in m: 10.30...10.50 2nd pressure hPa : 650 Rack travel in m: 13.10...13.30

1st version

3rd pressure hPa : 1200 Rack travel in m: 14.20...14.40 \* 4th pressure hPa : -Rack travel in m: 10.10...10.40 START CUT-OUT 1/min: 240 (260) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 Speed rpm : 950
Del.quantity cm3/: 216.0...219.0
1000 s: (213.0...222.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1500 rpm : 750 Speed Del.quantity cm3/: 234.0...238.0 1000 s: (231.0...241.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 132.0...134.0 1000 s: (129.0...137.0) cm3 : 8.00 Spread 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.90 rpm : 990...1000 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0) Remarks: \* Increase in control-rod travel with

respect to setting at least 0.1 mm

Note remarks

: MB 12,8 o 2 Test sheet : 20.03.92 Edition : 02.92 Replaces

: ISO-4113 Test oil

: 0 402 648 895 Combination no.

Injection pump

Pump designation : PE8P12OA32OLS7835 EP type number : 0 412 628 847

Governor

Governor design. : RQ300/1050PA972-1

Governer no. : 0 421 801 545

Customer-spec, information

: MERCEDES-BENZ Customer

: 0M402 A Engine

1st version kW : 280.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test lines

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 : (5.45...5.65) Prestroke mm

Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-Firing order

: 0-45-90-135-180-225-270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

Phasing

rpm: 600 1st speed

Rack travel in mm : 14.20...14.40

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 6.2...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 1000

: 225.0...227.0 Del.quantity 1000 : (222.0...230.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rom

cm3 : 8.00 1000 s: (12.0) Spread Rack travel in mm: 20.0 Aneroid pressure h: 1500 Testina: rpm : 800 1st rack travel in: 13.00 Speed Del.quantity cm3/: 232.0...236.0 1000 s: (229.0...239.0) Speed rpm : 1090...1105 2nd rack travel in: 4.00 Speed rpm : 1170...1200 4th rack travel in: 1350 cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 0.00...1.50 Speed Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) LOW IDLE 1 Setting point w/out bumper spring CIDM cm3 : 8.00 Rack travel in mm: 6.5 Spread 1000 s: (12.0) Testing: Speed rpm : 200 Minimum rack trave: 7.80 BREAKAWAY : 300 man . Rack travel in mm : 6.20...6.80 Rack travel in mm : 2.00 1st version 1mm rack travel less than : 380...420 Speed rom full load rack tr: 13.00 rpm : 1090...1105 Speed TORQUE CONTROL Dimension a mm : 0.50 nd speed rpm : 1050 Rack travel in m: 14.00...14.20 STARTING FUEL DELIVERY 2nd speed 3rd speed rpm : 800 Rack travel in m: 14.60...14.80 rpm : 100 Speed Del.quantity cm3/: 30.0...70.0 1000 s: (26.0...74.0) Aneroid/Altitude Rack travel in mm: 10.10...10.50 Compensator Test Remarks: 1st version Setting : 600 \* Increase in control-rod travel with Speed mqn respect to setting at least 0.1 mm hPa : 1000 Pressure Rack travel mm : 14.20...14.40 Measurement 1/min: 600 Speed 1st pressure hPa : 250 Rack travel in m: 10.40...10.60 2nd pressure hPa : 650 Rack travel in m: 13.20...13.40 3rd pressure hPa : 1200 Rack travel in m: 14.30...14.40 \* 4th pressure hPa : -Rack travel in m: 10.10...10.40 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 rpm : 1050 Del.quantity cm3/: 214.0...217.0 1000 s: (211.0...220.0)

#### Note remarks

: FIA 17,2 f Test sheet : 13.03.92 Edition : 07.91 Replaces Test oil : ISO-4113

: 0 402 648 912 Combination no.

Injection pump

Pump designation : PE8P130A920/5LS7841

EP type number : 0 412 638 803

Governor

Governor design. : RQV300...950PA994K

: 0 421 815 275 Governer no.

Customer-spec. information : IVECO-FIAT Customer

: 8280,42,050 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test lines

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 11.50...12.50

: 1-8-4- 3- 6- 5-7-2 Firing order

Phasing : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 11.50...12.50 & maximum rack tra: 19,9...20,1 Difference \* CS : 1.25...2.75

BASIC SETTING

1st speed rpm: 950

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 21.8...22.0

100 s: (21.5...22.3)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm : 3.8...4.2 Del.quantity cm3/ : 2.2...2.8 100 s: (1.9...3.1)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 995 1st speed

: 10.20...10.40 travel mm

2nd speed rpm:

: 300 : 2.00...2.30 travel mm

rpm : 700 3rd speed

: 5.80...6.20 travel mm

rpm : 1200 4th speed

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1000 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 950 Speed

Aneroid pressure h: 900 Del.quantity : 218.0...220.0

1000 : (215.0...223.0)

cm3 : 5.00Spread 1000 : (9.00)

RATED SPEED

1st version Coritrol Lever

position degrees: 109...117

Testing:

1st rack travel in: 9.50 npm : 990...1000 Speed 2nd rack travel in: 4.00

rpm : 1035...1065

4th rack travel in: 1200

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 58...66

Testing:

: 200 Speed COM Minimum rack trave: 5.50 Speed rpm : 300 Rack travel in mm : 3.90...4.10

CONSTANT REGULATION

rpm : 310...440 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 950

Rack travel in m: 10.50...10.60

2nd speed rpm : 400

Rack travel in m: 9.90...10.10

3rd speed rpm : 550

Rack travel in m: 10.10...10.30

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm hPa : 900 Pressure

Rack travel mm : 10.50...10.60

Measurement

1/min: 950 Speed

1st pressure hPa : -

Rack travel in m: 8.20...8.40

2nd pressure hPa : 300

Rack travel in m: 9.90...10.00

3rd pressure hPa : 230

Rack travel in m: 8.80...10.00

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 144.0...147.0 1000 s: (140.5...150.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.50

rpm : 990...1000 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...170.0

1000 s: (136.0...174.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 3.80...4.20 Del.quantity cm3/ : 22.0...28.0 1000 s: (19.0...31.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Note remarks

Test sheet : FIA 17,2 f1 : 20.03.92 Edition

: 07.91 Replaces : ISO-4113 Test oil

Combination no. : 0 402 648 913

Injection pump

Pump designation: PE8P130A920/5LS7841

EP type number : 0 412 638 803

Governor

Governor design. : RQV300...950PA994-1K

Governer no. : 0 421 815 276

Customer-spec. information

: IVECO-FIAT Customer

: 8280.42.350 SPR Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

**Opening** 

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test Lines

Outside diameter

x Wall thickness

: 8.00x2,50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 11.50...12.50

: 1-8-4- 3- 6- 5-7-2 Firing order

: 0-45-90-135-180-225-Phasing

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 11.5...12.5 & maximum rack tra: 19.9...20.1 Difference \* CS : 1.25...2.75

BASIC SETTING

rpm: 950 1st speed

Rack travel in mm : 11.30...11.40

Del.guantity cm3/: 24.8...25.0

100 s: (24.5...25.3)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 4.0...4.4 Del.quantity cm3/: 2.2...2.8

100 s: (1.9...3.1)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm: 995

: 10.20...10.40 travel mm

rpm : 300 2nd speed

: 2.00...2.30 travel mm

rpm : 700 3rd speed

: 5.80...6.20 travel mm

rpm : 1200 4th speed

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1040 Rack travel in mm : 9.00...11.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 950 Speed Aneroid pressure h: 900 : 248.0...250.0 Del.quantity 1000 : (245.0...253.0) : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 110...118 Testing: 1st rack travel in: 10.30 Speed rpm : 990...1000 2nd rack travel in: 4.00 rpm : 1040...1070 Speed 4th rack travel in: 1200 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 58...66 Testing: Speed rpm Minimum rack trave: 5.70 : 300 rpm Rack travel in mm : 4.10...4.30

CONSTANT REGULATION

rpm : 310...440

TORQUE CONTROL
Dimension a mm :?
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 11.30...11.40
2nd speed rpm : 800
Rack travel in m: 11.20...11.40
3rd speed rpm : 650
Rack travel in m: 11.00...11.30
4th speed rpm : 400
Rack travel in m: 10.40...10.70

Aneroid/Altitude Compensator Test

Speed

1st version
Setting
Speed rpm : 950
Pressure hPa : 900
Rack travel mm : 11.30...11.40

Measurement Speed 1/min: 950

1st pressure hPa : -

Rack travel in m: 7.60...7.80
2nd pressure hPa : 450
Rack travel in m: 10.60...10.70
3rd pressure hPa : 280
Rack travel in m: 8.70...9.10

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: Speed rpm : 500
Del.quantity cm3/ : 140.0...142.0
1000 s: (137.0...145.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.30 Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 170.0...200.0 1000 s: (166.0...204.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.00...4.40
Del.quantity cm3/: 22.0...28.0
1000 s: (19.0...31.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Note remarks

: MB 12,8 o 3 Test sheet : 20.03.92 Edition Replaces : 01.92

Test oil : ISO-4113

: 0 402 648 914 Combination no.

Injection pump

Pump designation : PE8P120A320LS7835 EP type number : 0 412 628 847

Governor

: RQV300...1050PA797 Governor design.

-30

: 0 421 813 921 Governer no.

Customer—spec, information

: MERCEDES-BENZ Customer

: 0N402 A **Engine** 

: 280.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test Lines

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60 : (5.45...5.65) Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. :8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.80...15.00

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 6.2...6.8

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 0.50...1.00 travel mm

rpm : 625 2nd speed

: 4.80...5.30 travel mm

rpm : 830 3rd speed

: 5.90...6.40 travel mm

rpm : 1108 4th speed

: 8.10...8.60 travel mm

rpm : 1190 5th speed

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1130

Speed

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 600 Speed Aneroid pressure h: 1000 : 225.0...227.0 : (222.0...230.0) Del.quantity 1000 : 6.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 118...126 Testina: 1st rack travel in: 13.30 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1250 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 82...90 Testing: : 200 Speed rom Minimum rack trave: 7.80 : 300 riom Rack travel in mm : 6.20...6.80 CONSTANT REGULATION rpm : 300...500 Speed TORQUE CONTROL : 0.60 Dimension a mm nd speed rpm : 1050 Rack travel in m: 14.30...14.50 2nd speed rpm ; 800 3rd speed rpm Rack travel in m: 15.20...15.40 Ameroid/Altitude Compensator Test 1st version Setting : 600 Speed rpin

hPa : 1000 Pressure Rack travel mm : 14.80...15.00 Measurement Speed 1/min: 600 1st pressure hPa : 250 Rack travel in m: 11.00...11.20

2nd pressure hPa : 650

Rack travel in m: 13.80...14.00 3rd pressure hPa : 1200 Rack travel in m: 14.90...15.00 \* 4th pressure hPa : -Rack travel in m: 9.30...9.60 START CUT-CUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 rpm : 1050 Del.quantity cm3/: 214.0...217.0 1000 s: (211.0...220.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1500 : 800 Speed rpm Del.quantity cm3/: 232.0...236.0 1000 s: (229.0...239.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 13.30 rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 200.0...220.0 1000 s: (196.0...224.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

: MB 12,8 o 4 Test sheet : 20.03.92 Edition : 01.92 Replaces

: ISO-4113 Test oil

Combination no. : 0 402 648 915

Injection pump

Pump designation : PE8P120A320LS7335 EP type number : 0 412 628 847

Governor

Governor design. : RQ300/1050PA993-1

: 0 421 801 582 Governer no.

Customer-spec. information : MERCEDES-BENZ Customer

: 0M402 A Engine

: 280.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. "C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

**Overflow** 

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test Lines

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 : 8-7-2-6-3-5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 14.80...15.00

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in am: 6.2...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 1000

: 225.0...227.0 Del.quantity

1000 : (222.0...230.0)

cm3 : 6.00 Spread

1000 : (%,66)

RATED SPEED

1st version

Setting point:

: 600 Speed rpm

Rack travel in mm: 20.0 Testing: 1st rack travel in: 13.70 rpm : 1090...1105 Speed 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1350 rom : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 6.5 Testina: Speed : 200 riom Minimum rack trave: 7.80 : 300 הוכף Rack travel in mm : 6.20...6.80 Rack travel in mm: 2.00 : 380...420 Speed rom TORQUE CONTROL : 0.50 Dimension a mm 2nd speed rpm : 1050 Rack travel in m: 14.70...14.90 3rd speed rpm : 800 Rack travel in m: 15.20...15.40 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm. hPa : 1000 Pressure Rack travel mm : 14.80...15.00 Measurement 1/min: 600 Speed 1st pressure hPa : 250 Rack travel in m: 11.00...11.20 2nd pressure hPa : 650 Rack travel in m: 13.80...14.00 3rd pressure hPa : 1200 Rack travel in m: 14.90...15.00 \* 4th pressure hPa : -Rack travel in m: 11.10...11.40 START CUT-OUT

1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: 1500 Speed rpm : 1050 bec.quantity cm3/: 214.0...217.0 1000 s: (211.0...220.0) cm3 : 8.00Spread 1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm3/: 232.0...236.0 1000 s: (229.0...239.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 135.0...137.0 1000 s: (132.0...140.0) cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.70 Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 210.0...230.0 1000 s: (206.0...234.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

Note remarks

: MB 12,8 p Test sheet : 27.03.92 Edition : 11.91 Replaces : ISO-4113 Test oil

: 0 402 648 922 Combination no.

Injection pump

Pump designation : PE8P120A320LS7845 : 0 412 628 851 EP type number

Governor

: RQV350...1050PA866 Governor design.

-15

: 0 421 813 960 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M482 LA Engine

: 280.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test cil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzie holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

: 1 680 750 075 Test lines

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.50...5.60 : (5.45...5.65)

Rack travel in mm : 20.00...21.00 : 8-7-2-6-3-5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 14.30...14.50

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 350.0 2nd speed Rack travel in mm: 4.8...5.4

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 1.30...1.80 travel mm

rpm : 570 2nd speed

: 3.30...3.80 travel mm rpm : 900

3rd speed : 5.40...5.90 travel mm

rpm : 1107 4th speed

: 7.80...8.30 travel mm

rpm : 1204 5th speed

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1130 Speed

Rack travel in mm : 16.50...18.00

Rack travel in m: 13.00...13.20 FULL LOAD DELIV. AT FULL LOAD STOP 3rd pressure hPa : 1100 Rack travel in m: 14.40...14.50 + 1st version 4th pressure hPa : rom : 600 Speed Rack travel in m: 9.50...9.80 Aneroid pressure h: 900 : 225.0...227.0 1000 : (222.0...230.0) Del.quantity START CUT-OUT cm3 : 6.00Spread 1/min: 270 (290) 1000 : (9.00) Speed FUEL DELIVERY CHARACTERISTICS RATED SPEED 1st version 1st version Control lever Aneroid pressure h: 1500 position degrees: 118...126 rpm : 1050 Speed Del.quantity cm3/: 214.0...217.0 1000 s: (211.0...220.0) Testing: 1st rack travel in: 12.80 Speed rpm : 1090...1100 cm3 : 8.00 Spread 1000 s: (12.0) 2nd rack travel in: 4.00 Aneroid pressure h: 1500 rpm : 1170...1200 Speed : 800 4th rack travel in: 1250 Speed **LDW** Del.quantity cm3/: 232.0...236.0 Speed nom : 0.00...1.00 1000 s: (229.0...239.0) cn3 : 8.00 LOW IDLE 1 Spread 1000 s: (12.0) Aneroid pressure h: 1500 Control lever position degrees: 62...70 rpm : 1050 Speed Del.quantity cm3/: 162.0...166.0 \* Testing: 1000 s: (159.0...159.0) rpm : 200 Speed cm3 : 8.00 Minimum rack trave: 7.40 Spread 1000 s: (12.0) rpm : 350 Rack travel in mm : 4.80...5.40 Aneroid pressure h: -Speed rpm : 500 Del. quantity cm3/: 132.0...134.0 CONSTANT REGULATION 1000 s: (129.0...137.0) rjoni : 350...550 Speed cm3 : 8.00Spread 1000 s: (12.0) TORQUE CONTROL Dimension a mm : 0.20 2nd speed rpm : 1050 **BREAKAWAY** Rack travel in m: 13.80...14.00 3rd speed rpm : 800 Rack travel in m: 14.40...14.60 1st version 1mm rack travel less than Aneroid/Altitude full load rack tr: 12.80 Compensator Test Speed rpm : 1090...1100 1st version STARTING FUEL DELIVERY Setting : 600 rpm Speed Speed rpm : 100 Del.quantity cm3/ : 230.0...250.0 1000 s: (226.0...254.0) hPa : 900 Pressure : 14.30...14.50 Rack travel mm Measurement Remarks:  $1/\min : 600$ Speed 1st pressure hPa : 300 Rack travel in m: 10.30...10.50 \* Increase in control-rod travel with respect to setting at least 0.1 mm 2nd pressure hPa : 600

\* = Set at reduced-delivery stop.

Note remarks

Test sheet : MB

: 27.03.92 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 648 934

Injection pump

: PE8P120A320LS7823 Pump designation

: 0 412 628 835 EP type number

Governor

Governor design. : RQV350...1050PA866

-21

: D 421 813 996 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : 0M442 LA

: 353.0 : 2100 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test lines

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 13.60...13.80

Del.quantity cm3/: 23.4...23.7

100 s: (23.1...24.0)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.0...5.6 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) cm3 : 0.6

Spread 100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 1.40...1.60 travel mm

rpm : 800 2nd speed

: 4.70...5.10 travel mm

rpm : 1100 3rd speed

: 7.60...8.20 travel mm

: 1175 4th speed rpm

: 9.20...9.80 travel mm

GUIDE SLEEVE POSITION

Control-Lever position

Degree: -1

rpm : 1150 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

Rack travel in m: 13.70...13.90 \* 4th pressure hPa : 1250 Rack travel in m: 14.50...14.70 1st version Speed rpm : 600 Aneroid pressure h: 900 Dal.quantity : 234.0...240.0) 5th pressure hpa : -Rack travel in m: 10.10...10.40 cm3 : 5.00 1000 : (9.00) Spread START CUT-OUT 1/min: 270 (290) Speed RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control lever position degrees: 115...123 1st version Aneroid pressure h: 1600 Testing: Speed rpm : 1050 Del.quantity cm3/ : 252.0...256.0 1st rack travel in: 13.40 Speed rpm : 1090...1100 1000 s: (249.0...259.0) 2nd rack travel in: 4.00 Speed rpm : 1170...1200 4th rack travel in: 1300 cm3 : 8.00Spread 1000 s: (12.0) Anaroid pressure h: 1600 rpm : 0.00...1.00 Speed rpm : 800 Speed Del.quantity cm3/: 270.0...274.0 1000 s: (267.0...277.0) LOW IDLE 1 Control lever cm3 : 8.00position degrees: 62...70 Spread 1000 s: (12.0) Aneroid pressure h: 1600 Testing: Speed rpm : 1050
Del.quantity cm3/: 184.0...187.0 \*
1000 s: (181.0...190.0) Speed rpm Minimum rack trave: 7.10 Speed rpm : 350 Rack travel in mm : 5.00...5.60 cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -CONSTANT REGULATION Speed rpm : 500 Del.quantity cm3/ : 149.0...151.0 1000 s: (146.0...154.0) rpm : 350...550 Speed TORQUE CONTROL cm3 : 8.00 Dimension a mm : 0.50 Spread 1000 s: (12.0) 2nd speed rpm : 1050 Rack travel in m: 14.40...14.60 d speed rpm : 800 3rd speed rpm Rack travel in m: 15.30...15.50 **BREAKAWAY** 1st version Aneroid/Altitude 1mm rack travel less than Compensator Test full load rack tr: 13.40 rpm : 1090...1100 Speed 1st version Setting STARTING FUEL DELIVERY : 600 Speed COM hPa : 900 Pressure : 13.60...13.80 Rack travel mm Speed rpm Del.quantity cm3/: 240.0...260.0 1000 s: (236.0...264.0) Measurement 1/min: 600 Speed Remarks: 1st pressure hPa : 350 Rack travel in m: 11.10...11.30 2nd pressure hPa : 500 Rack travel in m: 12.80...13.00 3rd pressure hPa : 1050 \* Increase in control-rod travel with respect to setting at least 0.1 mm

\* = Set at reduced-delivery stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

Test sheet : MAN : 20.03.92 Edition

Replaces

: ISO-4113 Test oil

: 0 402 735 807 Combination no.

Injection pump

Pump designation : PES5P120A720/3LS7250

EP type number : 0 412 725 809

Governor

Governor design. : RQV325...1000PA960-9

: 0 421 815 309 Governer no.

Customer-spec. information Customer

: D2865LF06/LU06 Engine

: 235.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 089 Test Lines

Outside diameter x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 4.80...4.90 Prestroke mm : (4.75...4.95)

Rack travel in mm : 15.00...16.00 : 1-3-5-4-2 Firing order

: 0-72-144-216-288 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 5

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60 & maximum rack tra: 15.0...16.0 Difference ° CS : 1.75...3.25

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 13.50...13.60

Del.guantity cm3/: 26.0...26.2

100 s: (25.7...26.5)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 325.0Rack travel in mm: 5.9...6.3 Del.quantity cm3/: 4.7...5.3 100 s: (4.4...5.6)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1060 1st speed

: 10.40...10.60 travel mm

2nd speed : 300 rpm

: 1.90...2.10 travel mm : 450 3rd speed rpm

3.40...4.00 travel mm

: 750 4th speed rpm : 6.80...7.20 travel mm

: 1350 5th speed rpm

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1115 Speed

Rack travel in mm : 10.90...13.50 Measurement 1/min: 900 FULL LOAD DELIV. AT FULL LOAD STOP Speed 1st pressure hPa : -1st version Rack travel in m: 9.20...9.40 rpm : 900 Speed 2nd pressure hPa : 170 Rack travel in m: 9.60...9.70 Aneroid pressure h: 1200 : 260.0...262.0 Del.quantity 1000 : (257.0...265.0) 3rd pressure hPa : 600 Rack travel in m: 12.00...12.40 : 5.00 cm3Spread : (9.00) 1000 START CUT-OUT RATED SPEED 1/min: 245 (265) Speed 1st version FUEL DELIVERY CHARACTERISTICS Control Leven position degrees: 296...304 1st version Testing: Aneroid pressure h: 1200 1st rack travel in: 12.20 rpm : 1000 rpm : 1040...1050 Speed Speed Del.quantity cm3/: 248.0...254.0 2nd rack travel in: 4.00 rpm : 1140...1170 1000 s: (245.0...257.0) Speed 4th rack travel in: 1350 Aneroid pressure h: 1200 : 650 rpm : 0.90...1.00Speed rpm Speed Del.quantity cm3/: 270.0...276.0 1000 s: (267.0...279.0) LOW IDLE 1 Aneroid pressure h: -Control Lever Speed rpm: 500 Del.quantity cm3/: 159.0...161.0 1000 s: (156.0...164.0) position degrees: 253...261 Testina: Speed rem Minimum rack trave: 7.60 BREAKAWAY : 325 rom Rack travel in mm : 6.00...6.20 1st version 1mm rack travel less than CONSTANT REGULATION rpm : 270...340 Speed full load rack tr: 12.20 rpm : 1040...1050 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version STARTING FUEL DELIVERY 1st speed rpm : 900 Rack travel in m: 13.50...13.60 : 1000 rpm : 100 2nd speed rpm Speed Del.quantity cm3/: 180.0...200.0 Rack travel in m: 13.10...13.30 1000 s: (176.0...204.0) rpm : 650 3rd speed Rack travel in m: 12.70...12.90 : 400 LOW IDLE 4th speed rom Rack travel in m: 11.90...12.20 Speed rpm: 325
Rack travel in mm: 5.90...6.30 Aneroid/Altitude Del.quantity cm3/: 47.0...53.0 1000 s: (44.0...56.0) Compensator Test cm3 : 8.00 Spread 1000 s: (12.00) 1st version Setting 900 Remarks: Speed rom : MAN-NR. 3-7203 hPa : 1200 Pressure

Rack travel mm

: 13.50...13.60

Setting and blocking of pointer of start-of-delivery sensor on cyl. 5 start of delivery

#### Note remarks

: CUM 5,9 w 2 Test sheet : 13.03.92 Edition : 02.92 Replaces : ISO-4113 Test oil

: 0 402 736 811 Combination no.

Injection pump

Pump designation : PES6P110A12ORS7213 : 0 412 716 804 EP type number

Governor

: RQV400...1250PA964-3 Governor design.

: 0 421 815 255 Governer no.

Customer-spec. information : C.D.C. Customer

: 6BTA-A Engine

: 147.0 1st version kW : 2500 Rated speed

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 115...125

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 4.35...4.45 : (4.30...4.50) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 14.80...14.90

Del.quantity cm3/: 15.8...16.0

100 s: (15.5...16.3)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 400.0 2nd speed

Rack travel in mm: 5.5..5.7 Del.quantity cm3/: 3.2...3.8

100 s: (3.0...4.0)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 400 1st speed

: 1.60...1.80 travel mm

2nd speed rpm : 600

travel mm : 2.80...3.30

rpm : 1300 3rd speed

travel mm : 7.20...7.40

: 1500 4th speed rpm

: 8.90...9.30 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed Aneroid pressure h: 1200

Del.quantity

: 158.5...160.5 : (155.5...163.5) 1000

: 5.00 cm3 Spread 1000 : (9.00)

#### RATED SPEED

1st version Control Lever

position degrees: 56...64

Testing:

1st rack travel in: 13.80

rpm : 1290...1300 Speed

2nd rack travel in: 4.00

rpm : 1460...1490 Speed

4th rack travel in: 1600

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 12...20

Testing:

: 275 Speed rpm Minimum rack trave: 7.20 rpm : 400 Speed

Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 14.80...14.90

2nd speed rpm : 800

Rack travel in m: 13.20...13.40

Aneroid/Altitude Compensator Test

1st version

Setting

: 1250 Speed rom hPa : 1200 Pressure

: 14.80...14.90 Rack travel mm

Measurement

1/min: 1250 Speed

1st pressure hPa : -

Rack travel in m: 8.20...8.60
2nd pressure hPa : 365
Rack travel in m: 10.60...10.70

3rd pressure hPa : 690

Rack travel in m: 13.70...14.10

START CUT-OUT

1/min: 290 (300) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 800 Del.quantity cm3/ : 156.5...162.5

1000 s: (153.5...165.5)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 90.0...94.0

1000 s: (88.0...96.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80

rpm : 1290...1300 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...175.0 1000 s: (130.0...180.0)

Rack travel in mm : 11.90...12.90

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.50...5.70 Del.quantity cm3/: 32.0...38.0

1000 s: (30.0...40.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: C.D.C. # 3918321

Start-of-delivery mark = 5.5° after

start of delivery cyl. 1.

#### Note remarks

: RVI 6,2 h Test sheet : 03.04.92 Edition : 10.91 Replaces : ISO-4113 Test oil

Combination no. : 0 402 746 883

Injection pump

Pump designation : PES6P110A320RS7198 : 0 412 716 802 EP type number

Governor

Governor design. : RQV275...1250PA942K

: 0 421 815 234 Governer no.

Customer-spec. information : RVI Customer

: MIDRO6-06-26 Engine

1st version kW : 132.5 : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 089 Test lines

Outside diameter

x Wall thickness

: 8.00X2.50X600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.60...4.70 Prestroke mm : (4.55...4.75)

Rack travel in mm : 12.50...13.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 14.10...15.10 & maximum rack tra: 20.0...21.0 Difference ° CS : 2.50...4.00

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 14.60...14.70

Del.quantity cm3/: 15.7...15.9

100 s: (15.4...16.1)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 275.0 2nd speed

Rack travel in mm: 4.9...5.3 Del.quantity cm3/: 1.7...2.2

100 s: (1.4...2.4)

cm3 : 0.4Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1300 ist speed

: 9.50...9.70 travel mm

rpm : 275 2nd speed

: 0.90...1.10 travel mm

: 550 3rd speed rpm

: 3.80...4.20 : 1000 travel mm

4th speed rpm

: 7.10...7.50 travel mm

rpm : 1600 5th speed

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1385 Speed Rack travel in mm : 12.30...14.90

FULL LOAD DELIV. AT FULL LOAD STOP

C10

2nd pressure hPa : 360 1st version Rack travel in m: 12.80...12.90
3rd pressure hPa : 220
Rack travel in m: 11.80...12.20 rpm : 1250 Speed Aneroid pressure h: 1000 : 157.0...159.0 Del.quantity 1000 : (154.5...161.5) START CUT-OUT cm3 : 4.00 Spread 1000 : (7.50) 1/min : 200 (220) Speed RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control Lever 1st version position degrees: 110...118 Aneroid pressure h: 1000 Speed rpm : 750
Del.quantity cm3/: 122.0...126.0
1000 s: (119.0...129.0) Testing: 1st rack travel in: 13.60 rpm : 1315...1325 Aneroid pressure h: -2nd rack travel in: 4.90 rpm : 500 rpm : 1475...1505 Speed Speed 4th rack travel in: 1600 Del.quantity cm3/: 67.0...69.0 1000 s: (64.5...71.5) rpm : 0.00...1.00 Speed LOW IDLE 1 BREAKAWAY Control lever position degrees: 58...66 1st version 1mm rack travel less than Testing: Speed : 200 rpm Minimum rack trave: 5.70 full load rack tr: 13.60 rpm : 1315...1325 rpm : 275 Speed Rack travel in mm : 5.00...5.20 STARTING FUEL DELIVERY CONSTANT REGULATION rpm : 350...480 Speed rpm : 100 Speed Del.quantity cm3/: 85.0...115.0 TORQUE CONTROL 1000 s: (81.0...119.0) Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1250 LOW IDLE Rack travel in m: 14.60...14.70 2nd speed rpm : 750 rpm : 275 Speed Rack travel in mm : 4.90...5.30 Rack trayel in m: 13.70...13.90 Del.quantity cm3/: 17.0...22.0 1000 s: (14.5...24.5) 3rd speed rpm : 300 Rack travel in m: 12.90...13.30 cm3 : 4.50 Spread 1000 s: (7.50) Aneroid/Altitude Compensator Test Remarks: 1st version Setting and blocking of pointer of Setting start-of-delivery sensor on cyl. 1 Speed : 1250 rom start of delivery hPa : 1000 Pressure Rack travel mm : 14.60...14.70 Measurement 1/min: 1250 Speed 1st pressure hPa : -Rack travel in m: 11.20...11.60

Note remarks

Test sheet : RVI 6,2 L Edition : 13.03.92 : 12.91 Replaces : ISO-4113 Test oil

Combination no. : 0 402 746 924

Injection pump

Pump designation : PES6P110A320RS7243 : 0 412 716 806

EP type number

Governor : RQV275...1250PA942-2 Governor design.

: D 421 815 288 Governer no.

Customer-spec. information Customer : RVI

: MIDRO6-06-26 L/2 Engine

: 132.5 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_ \_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.85...4.95 Prestroke mm

(4.80...5.00)

Rack travel in mm : 13.00...14.00 : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 13.00...13.10 & maximum rack tra: 20.0...21.0 Difference ° CS : 1.00...2.50

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 13.00...13.10

Del.guantity cm3/: 14.0...14.2

100 s: (13.7...14.4)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 275.0
Rack travel in mm : 5.2...5.6
Del.quantity cm3/ : 2.4...2.8

100 s: (2.4...2.8)

cm3 : 0.4Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed 1320 rpm :

9.70...9.90 travel mm 275 2nd speed rom

0.90...1.10 travel mm

: 600 3rd speed rpm

: 4.20...4.60 travel mm 1000 4th speed rom :

: 7.00...7.40 travel mm

: 1600 5th speed rpm

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1450 Speed

Speed 1/min : 1250 Rack travel in mm : 8.80...11.40 FULL LOAD DELIV. AT FULL LOAD STOP 1st pressure hPa : -Rack travel in m: 10.10...10.30 2nd pressure hPa : 435 1st version Rack travel in m: 12.20...12.30 3rd pressure hPa : 250 Speed rpm: 1250 Aneroid pressure h: 1000 Rack travel in m: 11.00...11.40 : 140.0...142.0 Del.quantity 1000 : (137.5...144.5) START CUT-OUT cm3 : 4.00 Spread 1000 : (7.50) 1/min: 200 (220) Speed RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control Lever 1st version position degrees: 272...280 Aneroid pressure h: 1000 Speed rom : 650 Del.quantity cm3/: 124.5...128.5 1000 s: (124.5...128.5) Testina: 1st rack travel in: 12.00 rpm : 1320...1330 Aneroid pressure h: -2nd rack travel in: 4.00 Speed rpm : 500 Del.quantity cm3/ : 79.0...81.0 rpm : 1465...1495 Speed 4th rack travel in: 1600 1000 s: (76.5...83.5) cm3 : 10.00 rpm : 0.00...1.00 Speed Spread 1000 s: (14.0) LOW IDLE 1 Control Lever position degrees: 218...226 **BREAKAWAY** Testina: 1st version Speed : 200 man 1mm rack travel less than Minimum rack trave: 6.00 rpm : 275 Rack travel in mm : 5.30...5.50 full load rack tr: 12.00 rpm : 1320...1330 Speed CONSTANT REGULATION rpm : 350...480 STARTING FUEL DELIVERY Speed TORQUE CONTROL. Speed rpm : 100 Del.quantity cm3/ : 100.0...120.0 1000 s: (96.0...124.0) Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1250 Rack travel in m: 13.00...13.10 LOW IDLE 2nd speed rpm : 650 Rack travel in m: 11.90...12.10
3rd speed rpm : 300
Rack travel in m: 11.20...11.60 Speed rpm: 275
Rack travel in mm: 5.20...5.60
Del.quantity cm3/: 24.0...28.0 1000 s: (24.0...28.0) Aneroid/Altitude cm3 : 4.50Spread Compensator Test 1000 s: (7.50) Remarks: 1st version Setting : 1250 Speed rpm Setting and blocking of pointer of hPa : 1000 Pressure start-of-delivery sensor on cyl. 1 : 13.00...13.10 Rack travel mm start of delivery Measurement

Prestroke mm BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MAN Test sheet Edition : 22.01.92 Replaces : ISO-4113 Test oil : 0 402 746 925 Combination no. Injection pump Pump designation : PES6P120A720LS7244 EP type number : 0 412 726 857 Governor Governor design. : RQ750PA981-1 : D 421 801 622 Governer no. Customer-spec. information : MAN Customer : D2866 LXE Engine : 300.0 1st version kW : 1500 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 105 assembly Opening : 207...210 pressure, bar Orifice plate : 0,8 diameter mm : 1 680 750 015 Test lines Outside diameter

: 6.00X1.50X600

(A) Injection pump setting values

Set equal delivery quant.

Insp. values in parentheses

Rack travel in mm : 18.00...21.00 Firing order : 6-2-4-1-5-3 : 0-60-120-180-240-300 Phasing : 0.50 (0.75) Tolerance + - ° Time to cyl. no. : 6 BASIC SETTING rpm: 700 1st speed Rack travel in mm: 14.30...14.40 Del.quantity cm3/: 33.9...34.1 100 s: (33.6...34.4) cm3 : 0.5Spread 100 s: (0.9) rpm : 300.0 2nd speed Rack travel in mm: 4.4...4.8 Del. quantity cm3/: 2.0...2.6 100 s: (1.7...2.9) cm3 : 0.8Spread 100 s: (1.2) FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 700 Speed : 339.0...341.0 Del.quantity 1000 : (336.0...344.0) : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: ?...0 Testing: 1st rack travel in: 13.30 Speed rpm : 750...755 2nd rack travel in: 4.00 rom : 788...801 Speed 4th rack travel in: 950 rpm : 0.00...1.00Speed SET IDLE AUXILIARY SPRING Rack travel in mm: 5.50

: 4.70...4.80

: (4.65...4.85)

x Wall thickness

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

x Length mm

# **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 13.30 Speed rpm : 750...755

Remarks:

: MAN-NR. 3-7183

Setting and blocking of pointer of start-of-delivery sensor on cyl. 6 start of delivery

**APPLICATION** 

Generator set

Note remarks

: RVI 6,2 L 1 Test sheet Edition : 13.03.92 : 01.92 Replaces : ISO-4113 Test oil

: 0 402 746 928 Combination no.

Injection pump

Pump designation : PES6P110A320RS7243 : 0 412 716 806

EP type number

Governor Governor design. : RQV275...1175PA942-3

: 0 421 815 294 Governer no.

Customer-spec. information : RVI Customer

: MIDRO6-06-26 M/2 Engine

: 132.5 1st version kW : 2350 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet tamp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 908 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.85...4.95 Prestroke mm

: (4.80...5.00)

Rack travel in mm : 13.00...14.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - \*

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 13.40...13.50 & maximum rack tra: 20.0...21.0 Difference \* CS : 1.00...2.50

BASIC SETTING

rpm: 1175 1st speed

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 15.2...15.4

100 s: (14.9...15.6)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 275.0 2nd speed Rack travel in mm: 4.8...5.2 Del.quantity cm3/: 2.3...2.7

100 s: (2.3...2.7)

cm3 : 0.4 100 s: (0.7) Spread

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1250 : 9.10...9.30 1st speed

travel mm rpm : 275 2nd speed

: 0.90...1.10 travel mm

rpm : 600 3rd speed

: 4.20...4.60 travel mm

rpm : 1000 4th speed

: 7.00...7.40 travel mm

rpm : 1600 5th speed : 13.00...14.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1450 Speed

Rack travel in mm: 8.80...11.40 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1175 Speed Aneroid pressure h: 1000 Anerou Del. quantity
1000 : 152.0...154.0 : (149.5...156.5) : 4.CO cm3 Spread 1000 : (7.50) RATED SPEED 1st version Control lever position degrees: 290...298 Testing: 1st rack travel in: 12.40 Speed rpm : 1245...1255 2nd rack travel in: 4.00 rpm : 1415...1445 Speed 4th rack travel in: 1550 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 238...246 Testing: : 200 Speed man. Minimum rack trave: 6.20 rpm : 275 Speed Rack travel in mm : 4.90...5.10 CONSTANT REGULATION rpm : 350...480 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1175 Rack travel in m: 13.40...13.50 2nd speed rpm : 700 Rack travel in m: 12.50...12.70 3rd speed rpm 300 Rack travel in m: 11.70...12.10 Aneroid/Altitude Compensator Test 1st version Setting : 1175 Speed rpm hPa : 1000 Pressure : 13.40...13.50 Rack travel mm

1/min : 1175 Speed 1st pressure hPa : -Rack travel in m: 9.90...10.10 2nd pressure hPa : 420 Rack travel in m: 11.65...11.75 3rd pressure hPa : 240 Rack travel in m: 10.60...10.80 START CUT-OUT 1/min : 200 (220) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed rpm: 700
Del.quantity cm3/: 149.0...153.0
1000 s: (146.0...156.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 79.0...81.0 1000 s: (76.5...83.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.40 rpm : 1245...1255 Speed STARTING FUEL DELIVERY Speed rpm Del.quantity cm3/: 100.0...120.0 1000 s: (96.0...124.0) LOW IDLE rpm : 275 Speed Rack travel in mm : 4.80...5.20 Del.quantity cm3/: 23.0...27.0 1000 s: (23.0...27.0) cm3 : 4.50 Spread 1000 s: (7.50) Remarks: Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

## Note remarks

: MB6,1I : 27.03.92 Test sheet Edition : 02.92 Replaces Test oil : TSO-4113

Combination no. : 0 403 246 031

Injection pump

Pump designation : PES6MW100/720RS1515 : 0 413 206 013

EP type number

Governor : RQV300...1300MW125-1 Governor design.

: 0 420 083 258 Governer no.

Customer-spec. information Customer : MB-NFZ

: 0M366LA Engine

: 127.0 1st version kW : 2600 Rated speed

# TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

: 1 680 750 089 Test Lines

Outside diameter x Wall thickness

: 8.00x2.50x600 x Length ram

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 5.20...5.30 : (5.15...5.35) Prestroke mm Rack travel in mm : 21.00...0.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 13001st speed

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 10.8...11.0

100 s: (10.6...11.2)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm: 4.2...4.4 Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1350 1st speed

: 8.00...8.40 travel mm rpm : 960 2nd speed

: 5.40...5.60 travel mm

: 600 3rd speed **HOM** : 3.20...3.80 travel mm

rpm : 300 4th speed

: 0.90...1.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1380 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed Aneroid pressure h: 1000

: 108.0...110.0 Del.quantity

1000 : (106.0...112.0)

cm3 : 3.50 Spread

1000 : (6.00)

1st version Control lever position degrees: 108...116 Testing: 1st rack travel in: 11.40 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 Speed rpm : 1430...1460 4th rack travel in: 1550 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 68...76 Setting point w/out bumper spring : 300 Speed man Rack travel in mm: 4.3 Testina: : 200 Speed man Minimum rack trave: 5.00 rpm : 300 Rack travel in mm : 4.20...4.40 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : -Pressure Rack travel mm : 9.70...9.90 Measurement  $1/\min : 500$ Speed 1st pressure hPa : 300 Rack travel in m: 10.70...10.90 2nd pressure hPa : 500 Rack travel in m: 12.00...12.20 3rd pressure hPa : 1000 Rack travel in m: 12.40...12.50 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed rpm : 750 Del.quantity cm3/: 99.0...102.0 1000 s: (96.5...104.5) cm3 : 5.00 Spread 1000 s: (7.0)

rpm : 500 Speed Del.quantity cm3/: 43.0...45.0 1000 s: (41.0...47.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.40 rpm : 1340...1350 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 115.0...125.0 1000 s: (112.0...128.0) LOW IDLE Speed rpm: 300 Rack travel in mm: 4.20...4.40 Remarks:

Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Spread cm3 : 3.50 1000 s: (5.50)

Aneroid pressure h: -

#### Note remarks

: MB 6,1 I 1 Test sheet : 27.03.92 Edition Replaces : 02.92 Test oil : ISO-4113

: 0 403 246 032 Combination no.

Injection pump

Pump designation : PES6MW100/720RS1515

: 0 413 206 013 EP type number

Governor

Governor design. : RQV300...1300MW125-2

: 0 420 083 259 Governer no.

Customer-spec. information Customer : MB-NFZ

: CM366LA Engine

: 142.0 1st version kW Rated speed : 2600

TEST BENCH REQUIREMENTS

Test cil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

: 1 680 750 089 Test Lines

Outside diameter

x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 21.00...0.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - \*

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 10.8...11.0

100 s: (10.6...11.2)

cm3 : 0.3Spread

100 s: (0.6)

rom : 300.0 2nd speed Rack travel in mm: 4.2...4.4 Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6) cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1350 1st speed

: 8.00...8.40 travel mm

rpm : 960 2nd speed travel mm

: 5.40...5.60 rpm : 500 3rd speed

: 3.20...3.80 travel mm : 300 4th speed rom

: 0.80...1.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1380 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 1100

: 108.0...110.0 Del.quantity

1000 : (106.0...112.0)

: 3.50 cm3 Spread

1000 : (6.00)

1st version Control lever

position degrees: 108...116

Testina:

1st rack travel in: 11.40

rpm : 1340...1350 Speed

2nd rack travel in: 4.00

Speed rpm : 1430...1460 4th rack travel in: 1550

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 68...76

Setting point w/out bumper spring

rpm : 300 Speed Rack travel in mm: 4.3

Testing:

Speed : 200 rpm Minimum rack trave: 5.00 : 300 rpm

Rack travel in mm : 4.20...4.40

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed rom hPa : -Fressure

: 9.60...9.80 Rack travel mm

Measurement

1/min : 500Speed

1st pressure hPa : 300

Rack travel in m: 10.70...10.90

2nd pressure hPa : 500 Rack travel in m: 12.00...12.20 3rd pressure hPa : 1100

Rack travel in m: 12.40...12.50

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100

Speed rpm : 750 Del.quantity cm3/ : 99.0...102.0

1000 s: (96.5...104.5)

Spread

cm3 : 5.00

1000 s: (7.0)

Aneroid pressure h: -

rom : 500 Speed

Del.quantity cm3/: 41.0...43.0 1000 s: (39.0...45.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40

rpm : 1340...1350 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 115.0...125.0 1000 s: (112.0...128.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 4.20...4.40

Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5)

cm3 : 3.50 Spread

1000 s: (5.50)

:

Remarks:

**C21** 

Note remarks

Test sheet

: 27.03.92 Edition : 02.92 Replaces : ISO-4113 Test oil

: 0 403 246 033 Combination no.

Injection pump

Pump designation : PES6MW100/720RS1511

: 0 413 206 011 EP type number

Governor

: RQV300...1300MW125 Governor design.

: 0 420 083 257 Governer no.

Customer-spec. information Customer : MB-NFZ

: 0M366LA Engine

: 156.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 089

Outside diameter

x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.20...5.30

: (5.15...5.35) Rack travel in mm : 21.00...0.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - \*

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 11.8...12.0

100 s: (11.6...12.2)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm: 4.1...4.3 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6)

cm3 : 0.3 Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpa : 1350 1st speed

: 8.00...8.40 travel mm rpm : 960 2nd speed

: 5.40...5.60 travel mm : 600 3rd speed rom

: 3.20...3.80 travel inni

: 300 4th speed rom

: 0.90...1.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1380 Speed

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed Aneroid pressure h: 1100

: 118.0...120.0 Del.quantity

1000 : (116.0...122.0)

: 3.50 cm3 Spread

1000 : (6.00)

1st version Control lever position degrees: 108...116 Testing: 1st rack travel in: 11.60 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 Speed rpm: 1435...1465 4th rack travel in: 1550 Speed rom : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 68...76 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 4.2 Testing: Speed rpm : 200 Minimum rack trave: 5.00 : 300 ("Din Rack travel in mm : 4.10...4.30 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed וחכורו Pressure hPa : -: 7.10...7.20 Rack travel min Measurement 1/min: 500 Speed 1st pressure hPa : 300 Rack travel in m: 8.80...9.00 2nd pressure hPa : 500 Rack travel in m: 10.10...10.30 3rd pressure hPa : 1100 Rack travel in m: 12.60...12.70 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100

rpm : 750 Del.quantity cm3/: 111.5...114.5

cm3 : 5.00

1000 s: (7.0)

1000 s: (109.0...117.0)

Speed rpm : 500 Del.quantity\_cm3/ : 41.0...43.0 1000 s: (39.0...45.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.60 Speed rpm : 1340...1350 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 115.0...125.0 1000 s: (112.0...128.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 4.10...4.30 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5)

cm3 : 3.50Spread 1000 s: (5.50)

Remarks:

Speed

Spread

Aneroid pressure h: -

: 3.30...3.40 : (3.25...3.45) Prestroke mm BOSCH THI. PUMP TEST SPECIFICATIONS Rack travel in mm : 12.00...14.00 Note remarks : 1-3-4-2 Firing order : PER 5,8 D Test sheet : 20.03.92 Edition : 02.92 Replaces : 0-90-180-270 Phasing : ISO-4113 Test oil Tolerance  $+ - \circ : 0.50 (0.75)$ Combination no. : 0 403 444 119 Time to cyl. no. : 1Injection pump Pump designation : PES4MW100/320RS1199 EP type number : 0 413 404 112 BASIC SETTING Governor rpm: 1300 Governor design. : RQV300...1300MW110K 1st speed : 0 420 083 996 Governer no. Rack travel in mm : 13.00...13.10 Customer-spec. information Del.quantity cm3/: 12.4...12.6 : PERKINS Customer 100 s: (12.2...12.8) : 110 TI Engine cm3 : 0.3 Spread : 82.0 1st version kW : 2600 Rated speed 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 300.02nd speed Rack travel in mm : 6.1...6.3 Del.quantity cm3/ : 1.6...2.0 Test oil inlet temp. °C : 38...42 100 s: (1.3...2.2) cm3 : 0.3Overflow valve Spread 100 s: (0.5) : 1 419 992 198 (B) Setting of injection pump Inlet press., bar: 1.50 with governor Test nozzle holder : 1 688 901 101 GUIDE SLEEVE TRAVEL assembly rpm : 1350 1st speed : 10.00...10.40 travel min Cpening rpm : 900 : 207...210 2nd speed pressure, bar : 6.40...6.60 travel mm rpm : 480 3rd speed Orifice plate : 3.10...3.70 : 0,6 travel mm diameter mm rpm : 300 : 1.40...1.80 4th speed travel mm : 1 680 750 008 Test lines GUIDE SLEEVE POSITION Control-lever position Outside diameter Degree: -1 x Wall thickness rpm : 1380 : 6.00X2.00X600 x Length mm Rack travel in mm : 15.20...17.80 (A) Injection pump setting values FULL LOAD DELIV. AT FULL LOAD STOP Insp. values in parentheses Set equal delivery quant. 1st version per values \_\_\_\_ rpm : 1300Speed Aneroid pressure h: 900 BEGINNING OF DELIVERY

Del.quantity : 124.0...126.0 1000 : (122.0...128.0)

Test pressure, bar: 30...32

cm3 : 3.50Spread 1000 : (6.00) RATED SPEED 1st version Control Lever position degrees: 116...124 Testina: 1st rack travel in: 12.00 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1450...1480 4th rack travel in: 1550 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 66...74 Setting point w/out bumper spring rom Rack travel in mm : 6.2 Testina: Speed rpm : 200 Minimum rack trave: 7.50 rpm : 300 Rack travel in mm : 6.10...6.30 CONSTANT REGULATION Speed rpm : 330...500 TORQUE CONTROL Torque control curve - 1st version rpm : 1300 1st speed Rack travel in m: 13.00...13.10 2nd speed rpm : 800 Rack travel in m: 12.00...12.20
3rd speed rpm: 500
Rack travel in m: 10.30...10.50 rpm : 1000 4th speed Rack travel in m: 12.40...12.70 5th speed rpm : 400 Rack travel in m: 9.90...10.20 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 1300 hPa : -Pressure Rack travel mm : 9.60...9.70 Measurement

1/min: 1300

1st pressure hPa : 130

Rack travel in m: 9.80...9.90 2nd pressure hPa : 180 Rack travel in m: 10.80...11.10 3rd pressure hPa : 900 Rack travel in m: 13.00...13.10 START CUT-OUT 1/min: 240 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 Speed rpm Del.quantity cm3/: 118.0...121.0 1000 s: (115.5...123.5) cm3 : 5.00 Spread 1000 s: (7.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 77.0...79.0 1900 s: (75.0...31.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.00 rpm : 1340...1350 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 70.0...80.0 1000 s: (67.0...83.0) Rack travel in mm: 19.00...21.00 LOW IDLE rpm : 300 Speed Rack travel in mm : 6.10...6.30 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks:

Start-of-delivery blocking 46.5° before start of delivery of cylinder 1

Speed

Note remarks

Test sheet : VOL Edition : 20.03.92 : 02.92 Replaces : TSO-4113 Test oil

: 0 403 444 135 Combination no.

Injection pump

Pumo designation : PES4MW100/320RS1223

EP type number : 0 413 404 119

Governor

: RQV300...1100MW122-1 Governor design.

: 0 420 083 990 Governer no.

Customer-spec. information Customer : VMF

: TD45F Engine

1st version kW : 92.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 173...176 pressure, bar

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.00...3.10 Prestroke mm

: (2.95...3.15)

Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC TETTING

rpm: 1100 1st speed

Rack travel in nm : 14.70...14.80

Del.quantity cm3/: 12.8...13.0

100 s: (12.6...13.2)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 2.8...3.2

100 s: (2.5...3.4)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1145 1st speed

: 10.00...10.40 travel mm

rpm : 800 2nd speed

: 6.10...6.30 travel mm rpm : 500 3rd speed

3.40...4.00 travel mm

rpm : 300 4th speed

: 1.50...1.90 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 750

: 128.0...130.0 Del.quantity 1000 : (126.0...132.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testing:

1st rack travel in: 13.70 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 Speed rpm : 1250...1280 4th rack travel in: 1350 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 68...76 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 6.1 Testing: rpm : 200 Speed Minimum rack arave: 7.50 rpm : 300 Rack travel in mm : 6.00 ... 6.20 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 14.70...14.80 : 380 2nd speed ripin Rack travel in m: 15.00...15.10 3rd speed rpm : 550 Rack travel in m: 14.20...14.30 4th speed rpm : 750 Rack travel in m: 14.70...14,80 Aneroid/Altitude Compensator Test 1st version Setting : 550 Speed וחסרו hPa : -Pressure : 12.80...12.90 Rack travel mm Measurement  $1/\min : 550$ Speed 1st pressure hPa : 220 Rack travel in m: 13.10...13.20 2nd pressure hPa : 370
Rack travel in m: 13.60...13.90
3rd pressure hPa : 750 Rack travel in m: 14.20...14.30 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 750

Speed rpm : 880 Del.quantity cm3/ : 135.5...138.5 1000 s: (133.0...141.0) cm3 : 5.50 Spread 1000 s: (7.0) Aneroid pressure h: rpm : 550 Speed Del.quantity cm3/: 86.0...88.0 1000 s: (84.0...90.0) RACK STOP ADJUSTMENT rpm : 100 Speed BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.70 rpm : 1140...1150 Speed STARTING FUEL DELIVERY : 100 Speed ripm Del.quantity cm3/: 145.0...155.0 1000 s: (142.0...158.0) Rack travel in mm : 19.00...21.00 LOW IDLE rpm : 300 Speed Rack travel in mm: 6.00...6.20 Del.quantity cm3/: 28.0...32.0 1000 s: (25.5...34.5) Spread cm3 : 3.50 1000 s: (5.50) Remarks:

Note remarks

Test sheet

: 20.03.92 Edition : 02.92 Replaces : ISO-4113 Test oil

: 0 403 444 137 Combination no.

Injection pump

Pump designation : PES4MW100/720RS1212

: 0 413 404 114 EP type number

Governor

Governor design. : RQV300...1300MW50-23

: 0 420 083 269 Governer no.

Customer-spec. information Customer : MB-NFZ

: 0M364LA Engine

: 102.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3,70...3.80

: (3.65...3.85) Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

: 0-90-180-270 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 13.10...13.20

Del.quantity cm3/: 10.1...10.3

100 s: (9.9...10.5)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.3...6.5 Del.guantity cm3/: 1.0...1.4 100 s: (0.7...1.6)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1450 1st speed

: 9.40...10.00 travel mm

mpm : 1350 2nd speed

travel mm : 8.50...8.70

: 500

3rd speed rpm

: 2.70...3.30 travel mm

: 300 4th speed rpm

: 1.20...1.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1350 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 101.0...105.0)
1000 : (99.0...105.0)
2000 : (3.50)

1000 : (6.00)

1st version Control lever position degrees: 108...116 Testing: 1st rack travel in: 12.10 Speed rpm : 1340...1350 2nd rack travel in: 4.00 Speed rpm : 1450...1480 4th rack travel in: 1550 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 71...79 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.4 Testing: Speed rpm : 200 Minimum rack trave: 8.00 Speed rpm : 300 Rack travel in mm : 6.30...6.50 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : -Pressure : 9.80...10.00 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 200 Rack travel in m: 10.90...11.10 2nd pressure hPa : 400 Rack travel in m: 12.60...12.80 3rd pressure hPa : 700 Rack travel in m: 13.20...13.30 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 600 Del.quantity cm3/: 86.0...89.0 1000 s: (83.5...91.5) cm3 : 5.00 Spread 1000 s: (7.0) Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 36.0...38.0
1000 s: (34.0...40.0)

BREAKAWAY

1st version
1mm rack travel less than

STARTING FUEL DELIVERY

full load rack tr: 12.10

Speed rpm : 100 Del.quantity cm3/: 85.0...95.0 1000 s: (82.0...98.0)

rpm : 1340...1350

LOW IDLE

Spe≥d

Speed rpm : 300
Rack travel in mm : 6.30...6.50
Del.quantity cm3/: 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB Test sheet : 20.03.92 Edition : 02.92 Replaces : ISO-4113 Test oil : 0 403 444 138 Combination no. Injection pump Pump designation : PES4MW100/720RS1151 : 0 413 404 104 EP type number Governor Governor design. : RQV300...1300MW50-27 : 0 420 083 273 Governer no. Customer-spec. information : MB-NFZ Customer : 0M364A Engine : 79.0 1st version kW : 2600 Rated speed TEST BENCH REQUIREMENTS Test oil : 38...42 inlet temp. °C Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening : 172...175 pressure, bar Test lines : 1 680 750 089 Outside diameter x Wall thickness : 8.00X2.50X600 x Length mm (A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 30...32 : 3.70...3.80 Prestroke mm : (3.65...3.85) Rack travel in mm: 9.00...12.00

Firing order : 1-3-4-2 Phasing : 0-90-180-270 Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm : 1300Rack travel in mm : 10.80...10.90 Del.quantity cm3/: 8.2...8.4 100 s: (8.0...8.6) cm3 : 0.3Spread 100 s: (0.6) rpm : 300.02nd speed Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rom : 1450 1st speed : 9.40...10.00 travel mm : 1350 2nd speed rpm : 8.50...8.70 travel mm : 500 3rd speed rpm : 2.70...3.30 travel mm : 300 4th speed rpm : 1.20...1.60 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1350Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1300 Speed Aneroid pressure h: 700 : 82.0...84.0 Del.quantity 1000 : (80.0...86.0) : 3.50 cm3 Spread 1000 : (6.00) RATED SPEED

1st version Control lever position degrees: 110...118 Testing: 1st rack travel in: 9.80 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1420...1450 Speed 4th rack travel in: 1500 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 74...82 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.4 Testing: : 200 Speed rom Minimum rack trave: 8.00 : 300 rpm Rack travel in mm : 6.30...6.50 TORQUE CONTROL Dimension a mm : 0.80 Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 10.80...10.90 2nd speed rpm : 600 Rack travel in m: 11.60...11.70 3rd speed rpm : 1000 Rack travel in m: 11.60...11.70 4th speed rpm : 1175 Rack travel in m: 11.30...11.50 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rpm Pressure hPa : : 9.70...9.80 Rack travel mm Measurement Speed  $1/\min : 500$ 1st pressure hPa : 200 Rack travel in m: 10.70...10.90 2nd pressure hPa : 300 Rack travel in m: 11.30...11.50 3rd pressure hPa : 700 Rack travel in m: 11.60...11.80 START CUT-OUT

1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 700 rpm : 600 Speed

Del.quantity cm3/: 75.0...78.0 1000 s: (72.5...80.5) Spread cm3 : 5.00

1000 s: (7.0)

Aneroid pressure h: rpm : 500Speed

Del.quantity cm3/: 46.0...48.0 1000 s: (44.0...50.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.80

rpm : 1340...1350 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 78.0...88.0

1000 s: (75.0...91.0)

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Spread cm3: 3.50

1000 s: (5.50)

Remarks:

Speed

Note remarks

: MB 6,0 D 65 : 13.03.92 Test sheet Edition Replaces : 03.91

: ISO-4113 Test oil

Combination no. : 0 403 446 259

Injection pump

Pump designation : PES6MW100/720RS1131-

: 0 413 406 165 EP type number

Governor

Governor design. : RQV300...1300MW68-2

: 0 420 083 224 Governer no.

Customer-spec. information : MB-NFZ Customer

: 0M366LA Engine

1st version kW : 177.0 : 2600 Rated speed

YEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.60...3.70 Prestroke mm

: (3.55...3.75)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 14.40...14.50

Del.guantity cm3/: 11.4...11.6

100 s: (11.2...11.8)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm: 1450

: 9.40...9.80 travel mm

rpm : 1350 2nd speed

: 8.40...8.60 travel mm rpm : 600 3rd speed

: 3.90...4.50 travel mm rpm : 300

4th speed : 0.80...1.20 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 1000

: 114.0...116.0 Del.quantity

1000 : (112.0...118.0)

cm3 : 3.50 1000 : (6.00) Spread

1st version Control lever

position degrees: 116...124

Testing:

1st rack travel in: 13.40

Speed rpm : 1340...1350

2nd rack travel in: 4.00

Speed rpm: 1480...1510 4th rack travel in: 1600

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 78...86

Setting point w/out bumper spring

: 300 rpm Rack travel in mm: 6.5

Testing:

: 200 Speed rpm Minimum rack trave: 8.00 rpm : 300 Speed

Rack travel in mm : 6.40...6.60

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rom hPa : Pressure

: 10.80...10.90 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : 200

Rack travel in m: 11.50...11.70

2nd pressure hPa : 400

Rack travel in m: 13.30...13.50

3rd pressure hPa : 1000

Rack travel in m: 14.40...14.50

START CUT-OUT

1/min : 180 (200) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 rpm : 750 Speed

Del.quantity cm3/: 106.5...109.5 1000 s: (104.0...112.0)

cm3 : 5.00

1000 s: (7.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 41.0...43.0 1000 s: (39.0...45.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40

rpm : 1340...1350 Speed

STARTING FUEL DELIVERY

: 100 Speed mar

Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 6.40...6.60

Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5)

cm3 : 3.50Spread 1000 s: (5.50)

Remarks:

Spread

Note remarks

: MWM 6,2 F Test sheet Edition : 03.04.92 Replaces : 10.91 : ISO-4113 Test oil

: 0 403 446 281 Combination no.

Injection pump

Pump designation : PES6MW100/720RS1217

: 0 413 405 207 EP type number

Governor

Governor design. : RQ300/1000MW116 : 0 420 082 056 Governer no.

Customer-spec. information Customer : 14414

: TBD2268-6 Engine

: 150.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 740 014 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 4.00...4.10 Prestroke mm

: (3.95...4.15) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 14.4...14.6

100 s: (14.2...14.8)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 7.0...7.2

Del.quantity cm3/ : 1.1...1.5 100 s: (0.8...1.7)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1100 1st speed

: 7.30...7.70 travel mm rpm : 1000 2nd speed

: 5.90...6.10 travel mm

: 370 3rd speed rpm

travel mm : 4.70...5.30

4th speed 300 rpm

: 1.20...1.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: 108

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 1200

: 144.0...146.0 Del.quantity 1000 : (142.0...148.0)

: 3.50 Spread cm3

1000 : (6.00)

1st version Control lever

position degrees: 91...99

Setting point:

Speed rpm : 600 Rack travel in mm: 20.0

Testing:

1st rack travel in: 11.50 Speed rpm: 1040...1055

2nd rack travel in: 4.00

rpm : 1145...1175 Speed

4th rack travel in: 1250

rpm : 0.60...1.00Speed

LOW IDLE 1 Control lever

position degrees: 74...82

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 7.1

Testing:

rpm : 200 Speed Minimum rack trave: 8.50

Speed rpm : 300 Rack travel in mm : 7.00...7.20

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpn

hPa : -Pressure

: 8.80...8.90 Rack travel mm

Measurement

1/min : 500 Speed

1st pressure hPa : 300

Rack travel in m: 9.50...9.70

2nd pressure hPa : 650

Rack travel in m: 11.60...11.80

3rd pressure hPa : 1200

Rack travel in m: 12.50...12.60

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 rpm : 750 Speed

Del.quantity cm3/: 143.5...146.5 1000 s: (141.0...149.0)

cm3 : 5.00 Spread

1000 s: (7.0)

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 64.0...66.0

1000 s: (62.0...68.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

rpm : 1040...1055 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 95.0...105.0 1000 s: (92.0...108.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.00...7.20
Del.quantity cm3/: 11.0...15.0

1000 s: (8.5...17.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

Set pneumatic shutoff\_device to control-rod stop = 0.5...1.5 mm control-rod travel at 4.5 bar atmospheric pressure.

Note remarks

: RVI 6,2 J 1 Test sheet : 13.03.92 Edition : 12.91 Replaces

: ISO-4113 Test oil

: 0 403 446 291 Combination no.

Injection pump

Pump designation : PES6MW100/320RS1214

EP type number : 0 413 406 204

Governor

: RQV275...1250MW115-1 Governor design.

: 0 420 083 992 Governer no.

Customer-spec. information Customer : RVI

: MIDR 060226 V Engine

: 129.0 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 033

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

**Opening** 

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

: 1 680 750 008 Test lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 4.20...4.30 Prestroke mm

(4.15...4.35)

Rack travel in mm : 16.50...19.50 Firing order : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

rpm : 1250 1st speed

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 10.3...10.5

100 s: (10.1...10.7)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 275.0 2nd speed

Rack travel in mm : 5.80...6.20 Del.quantity cm3/: 2.0...2.4

100 s: (1.7...2.6)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1330 1st speed

: 9.80...10.20 travel mm : 950

2nd speed rpm

: 6.90...7.10 : 550 travel mm

3rd speed rpm

: 3.60...4.20 travel mm

rpm : 275 4th speed : 0.80...1.20 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1350 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed

Aneroid pressure h: 1000

Del.quantity : 103.0...107.0)

cm3 : 3.50Spread

1000 : (6.00)

### RATED SPEED

1st version Control Lever

position degrees: 298...306

Testing:

1st rack travel in: 11.80

rpm : 1320...1340 Speed

2nd rack travel in: 4.00

rpm : 1460...1500 Speed

4th rack travel in: 1600

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 238...246 Setting point w/out bumper spring

rpm Rack travel in mm: 7.1

Testing:

rpm : 200 Speed Minimum rack trave: 6.10 rpm : 275

Rack travel in mm : 5.50...5.90

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 12.80...12.90

2nd speed rpm : 700

Rack travel in m: 11.90...12.00

3rd speed rpm : 1000

Rack travel in m: 12.30...12.50

4th speed rpm : 500 Rack travel in m: 11.50...11.70

Aneroid/Altitude

Compansator Test

1st version

Setting

: 1250 Speed rom hPa : 1000 Pressure

Rack travel mm : 12.80...12.90

Measurement

1/min: 1250 Speed

1st pressure hPa : -

Rack travel in m: 11.70...11.90 2nd pressure hPa : 180 Rack travel in m: 12.30...12.60

3rd pressure hPa : 140

Rack travel in m: 12.00...12.20

START CUT-OUT

1/min : 200 (220) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

rpm : 700 Speed

Del.quantity cm3/: 98.5...101.5 1000 s: (96.0...104.0)

cm3 : 5.00 Spread

1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 1250 Del.quantity cm3/: 89.0...91.0 1000 s: (87.0...93.0)

## BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.80

rpm : 1320...1340 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 88.0...112.0 1000 s: (85.0...115.0)

Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.80...6.20
Del.quantity cm3/: 20.0...24.0

1000 s: (17.5...26.5)

Spread cm3 : 3.50

1000 s: (5.00)

#### Remarks:

Set start-of-delivery sensor with prestroke = 4.20...4.30 mm at cylinder 1.

D09

Note remarks

Test sheet : IHC

: 20.03.92 Edition

Replaces Test oil

: ISO-4113

: 0 403 446 298

Injection pump

Combination no.

Pump designation : PES6MW100/320RS1198

: 0 413 406 188 EP type number

Governor

: RQV350...1200M46-44 Governor design.

: 0 420 083 265 Governer no.

Customer-spec. information : NAVISTAR Customer

: DTA-466 Engine

1st version kW : 157.0

: 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

: 1 680 750 008 Test lines

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35 : (3.20...3.40) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 800 1st speed

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 12.2...12.4

100 s: (12.0...12.6)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.0 2nd speed Rack travel in mm: 5.3...5.5

Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1450 1st speed

: 9.80...10.20 travel mm

rpm : 1250 2nd speed

: 7.90...8.10 travel mm

rpm : 550 3rd speed

: 3.10...3.70 travel mm

rpm : 350 4th speed

: 1.30...1.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 800 Speed

Aneroid pressure h: 900

: 122.0...124.0 Del.quantity

1000 : (120.0...126.0)

: 3.50 cm3 Spread 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 102...110

Testina:

1st rack travel in: 10.50

rpm : 1270...1290

2nd rack travel in: 4.00

Speed rpm : 1395...1405 4th rack travel in: 1550

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control Lever

position degrees: 66...74

Setting point w/out bumper spring

rpm Rack travel in mm: 5.4

Testing:

rpm : 100 Speed

Minimum rack trave: 9.00

: 350 Speed rpm Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

rpm : 300...450 Speed

Aneroid/Altitude

Compensator Test

1st version

Setting

: 500 Speed rpm

hPa : 900 Pressure

: 11.50...11.60 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.60...9.70

2nd pressure hPa : 215

Rack travel in m: 10.00...10.10
3rd pressure hPa : 380
Rack travel in m: 10.70...11.10

START CUT-OUT

1/min: 280 (290) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 1200 Del.quantity cm3/: 118.5...122.5

1000 s: (116.5...124.5)

cm3 : 5.00Spread 1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 83.0...85.0 1000 s: (81.0...87.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.50

rpm : 1270...1290 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 130.0...170.0 1000 s: (125.0...175.0)

Rack travel in mm : 12.50...13.50

LOW IDLE

rom : 350 Speed

Rack travel in mm : 5.30...5.50 Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

: IHC #1819326C91

Only perform pump setting with original overflow valve without IH hose and

restrictor 1.2 mm diameter.

In unlatched condition, do not operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before

shutoff.

Note remarks

: MB 6,1 A 1 : 13.03.92 Test sheet Edition : 01.92 Replaces Test oil : ISO-4113

: 0 403 446 299 Combination no.

Injection pump

Pump designation : PES6MW100/720RS1144

: 0 413 406 138 EP type number

Governor

: RQV300...1200MW69-3 Governor design.

: 0 420 083 266 Governer no.

Customer spec. information : MB-NFZ Customer

: 0M366A Engine

1st version kW : 116.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

: 172...175 pressure, bar

: 1 680 750 089 Test lines

Outside diameter x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm : (3.65...3.85) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1200 1st speed

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 7.7...7,9

100 s: (7.5...8.1)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 7.9...8.1 Del.quantity cm3/ : 0.9...1.3 100 s: (0.6...1.5)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1250 1st speed : 8.80...9.20 travel mm

2nd speed rpm : 1000 : 6.70...6.90 travel mm

: 500 3rd speed rpm

: 4.20...4.80 travel mm

: 300 4th speed rom : 1.50...1.90 travel mm

GUIDE SLEEVE POSITION Control-Lever position

Degree: -1

rpm : 1240

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

: 1200 Speed rpm

: 77.0...79.0 Del.quantity 1000 : (75.0...81.0)

: 3.50 Spread cm3

: (6.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 112...120

Testing:

1st rack travel in: 10.10

Speed rpm : 1240...1250

2nd rack travel in: 4.00

rpm : 1315...1345 Speed

4th rack travel in: 1450

rpm : 0.00...1.00Speed

LOW IDLE 1

Control Lever

position degrees: 78...86

Setting point w/out bumper spring

rpm Rack travel in mm: 3.0

Testing:

rpm : 200 Speed

Minimum rack trave: 9.50

Speed rpm : 300 Rack travel in mm : 7.90...8.10

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200
Rack travel in m: 11.10...11.20
2nd speed rpm : 750

Rack travel in m: 11.70...11.90

3rd speed rpm : 600

Rack travel in m: 12.00...12.20

START CUT-OUT

Speed

1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 Speed rom

Del.quantity cm3/: 70.5...73.5 1000 s: (68.0...76.0)

Spread

cm3 : 5.00 1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed

rpm : 100

D13

Del.quantity cm3/: 78.0...88.0

1000 s: (75.0...91.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 7.90...8.10

Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5) Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

Note remarks

: RVI 8,8 S 5 Test sheet : 13.03.92 Edition : 01.92 Replaces : 1SO-4113 Test oil

Combination no. : 0 403 446 300

Injection pump

Pump designation : PES6MW100/320RS1171

: 0 413 406 156 EP type number

Governor

Governor design. : RQV300...1300MW80-7

Governer no. : 0 420 083 267

Customer-spec, information Customer : RVI

: MIDS 060212B Engine

: 117.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 033

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

**Opening** 

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

: 1 680 750 008 Test lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.00...3.10 Prestroke mm : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5- 3- 6- 2- 4

: 0-60-120-180-240-300 Phasing

Tolerance + - \* : 0.50 (0.75)

BASIC SETTING

rpm: 13001st speed

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 8.8...9.0

100 s: (8.6...9.2)

cm3 : 0.3Spread

£ 100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 5.40...5.80 Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1480 1st speed

: 9.60...10.00 travel mm

rpm : 1350 2nd speed

: 8.70...8.90 travel mm

rpm : 500 3rd speed

3.30...3.90 300 travel mm

4th speed **COM** 

: 1.20...1.60 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed Aneroid pressure h: 700

: 88.0...90.0 Del.quantity

1000 : (86.0...92.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Control Lever

position degrees: 116...124

Testing: 1st rack travel in: 9.80 rpm : 1395...1405 Speed 2nd rack travel in: 4.00 rpm : 1485...1515 Speed 4th rack travel in: 1700 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 61...69 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.2 Testing: : 200 Speed rom Minimum rack trave: 7.60 : 300 mch. Rack travel in mm : 5.40...5.80 Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 hPa : 700 Speed rom Pressure Rack travel mm : 10.80...10.90 Measurement 1/min : 500Speed 1st pressure hPa : -Rack travel in m: 9.00...9.40 2nd pressure hPa : 180 Rack travel in m: 10.35...10.45 3rd pressure hPa : 120 Rack travel in m: 9.70...9.90 START CUT-OUT 1/min: 230 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 900 Speed Del.quantity cm3/: 86.0...89.0 1000 s: (83.5...91.5) Spread cm3 : 5.00 1000 s: (7.0)

**BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.80 rpm : 1395...1405 Speed STARTING FUEL DELIVERY : 100 Speed rom Del.guantity cm3/: 90.0...110.0 1000 s: (87.0...113.0) Rack travel in mm : 19.50...21.00 LOW IDLE Speed ripin Rack travel in mm : 5.40...5.80 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3 : 3.50 1000 s: (5.50) Remarks: Start-of-delivery mark mode with prestroke 3.00...3.10 mm at barrel 1

Speed

Aneroid pressure h: -

rpm : 500

Del.quantity cm3/: 49.0...51.0 1000 s: (47.0...53.0)

Note remarks

: MB 6,1 B 12 Test sheet : 13.03.92 Edition : 01.92 Replaces : ISO-4113 Test oil

Combination no. : 0 403 446 301

Injection pump

Pump designation : PES6MW100/720RS1131-

: 0 413 406 165 EP type number

Governor

: RQV300...1300MW50-22 Governor design.

: 0 420 083 268 Governer no.

Customer-spec. information : MB-NFZ Customer

: 0M366LA Engine

: 177.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 039 Test Lines

Outside diameter x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.60...3.70 Prestroke mm

: (3.55...3.75)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm : 13001st speed

Rack travel in mm : 14.40...14.50

Del.quantity cm3/: 11.4...11.6

100 s: (11.2...11.8)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm : 6.4...6.6 Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1450 1st speed

: 9.40...9.80 travel mm rpm : 1350 2nd speed

: 8.50...8.70 travel mm

rpm : 450 3rd speed

: 2.60...3.20 travel nm

rpm : 300 4th speed

: 1.20...1.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1340 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed Aneroid pressure h: 1000

: 114.0...116.0 Del.quantity

1000 : (112.0...118.0) cm3 : 3.50

Spread

1000 : (6.00)

1st version Control lever position degrees: 110...118 Testing: 1st rack travel in: 13.40 rpm : 1340...1350 2nd rack travel in: 4.00 rpm : 1470...1500 Speed 4th rack travel in: 1550 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 74...82 Setting point w/out bumper spring rpm Rack travel in mm: 6.5 Testing: rpm : 200 Speed Minimum rack trave: 8.00 rpm : 300 Rack travel in mm : 6.40...6.60 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa:-: 10.80...10.90 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 200 Rack travel in m: 11.10...11.30 2nd pressure hPa : 500 Rack travel in m: 13.50...13.70 3rd pressure hPa : 1000 Rack travel in m: 14.40...14.50 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version

Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 41.0...43.0 1000 s: (39.0...45.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.40 rpm : 1340...1350 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 100.0...110.0 1000 s: (97.0...113.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks: •

Spread

Aneroid pressure h: 1000

Speed rpm : 750 Del.quantity cm3/ : 106.5...109.5

cm3 : 5.00

1000 s: (7.0)

1000 s: (104.0...112.0)

Note remarks

Test sheet

: MB

Edition

: 13.03.92

Replaces Test oil : 02.92 : 150-4113

Combination no.

: 0 403 446 302

Injection pump

Pump designation : PES6MW100/720RS1131

EP type number

: 0 413 406 123

Governor Governor design.

: RQV300...1300MW50-24

Governer no.

: 0 420 083 270

Customer-spec. information Customer

: MB-NFZ

Engine

: 0M 366 A

1st version kW

: 121.0

Rated speed

: 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. "C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Opening

pressure, bar

: 172...175

Test Lines

: 1 680 715 089

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 3.70...3.80

: (3.65...3.75)

Rack travel in mm : 9.00...12.00

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Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - \*

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm: 1300

Rack travel in mm: 10.90...11.00

Del.quantity cm3/: 8.8...9.0

100 s: (8.6...9.2)

Spread

cm3 : 0.3

100 s: (0.6)

rpm : 300.0 2nd speed

Rack travel in mm: 6.1...6.3

Del.quantity cm3/: 1.0...1.4

Spread

100 s: (0.7...1.6) cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1450 1st speed

: 9.40...10.00 travel mm

rpm : 1350 2nd speed

: 8.50...8.70 travel mm

: 500 3rd speed rpm

2.70...3.30 travel mm

4th speed rpm

: 1.20...1.50 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1300

Aneroid pressure h: 700

: 88.0...90.0

Del.quantity

1000 : (86.0...92.0)

: 3.50 cm3

1000 : (6.00)

RATED SPEED

Spread

1st version Control Lever position degrees: 108...116 1st version Aneroid pressure h: 700 rpm : 750 Testing: Del.quantity cm3/: 86.0...89.0 1000 s: (83.5...9).5) 1st rack travel in: 9.90 rpm : 1340...1350 Speed cm3 : 5.002nd rack travel in: 4.00 Spread 1000 s: (7.0) rpm : 1410...1440 Speed Aneroid pressure h: -4th rack travel in: 1500 rpm : 500 rpm : 0.00...1.00Speed Speed Del.quantity cm3/: 49.0...51.0 1000 s: (47.0...53.0) LOW IDLE 1 Control Lever position degrees: 72...80 Setting point w/out bumper spring BREAKAWAY rpm : 300Rack travel in mm: 6.2 1st version 1mm rack travel less than Testing: : 200 full load rack tr: 9.90 Speed rpm rpm : 1340...1350 Minimum rack trave: 8.00 Speed : 300 COM STARTING FUEL DELIVERY Rack travel in mm : 6.10...6.30 TORQUE CONTROL Speed rpm : 100 Del.quantity cm3/ : 100.0...110.0 1000 s: (97.0...113.0) : 0.70 Dimension a mm Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 10.90...11.00 2nd speed rpm : 750 LOW IDLE Rack travel in m: 11.60...11.70 3rd speed rpm : 1100 Rack travel in m: 11.10...11.30 rpm : 300 Speed Rack travel in mm : 6.10...6.30 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Aneroid/Altitude cm3 : 3.50 Spread Compensator Test 1000 s: (5.50) Remarks: 1st version Setting : 500 Speed rpm Pressure hPa : -: 9.80...9.90 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 200 Rack travel in m: 10.20...10.30 2nd pressure hPa : 400 Rack travel in m: 11.00...11.30 3rd pressure hPa : 700 Rack travel in m: 11.60...11.70 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet

: 13.03.92 Edition : 02.92 Replaces : ISO-4113 Test oil

: 0 403 446 303 Combination no.

Injection pump

Pump designation : PES6MW100/720RS1131-

EP type number : 0 413 406 165

Governor

Governor design. : RQV300...1300MW50-25

Governer no. : 0 420 083 271

Customer-spec. information Customer : MB-NFZ

: 0M366LA Engine

1st version kW : 155.0 : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 089

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.60...3.70 Prestroke mm

: (3.55...3.75)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (C.75)

BASIC SETTING

rpm : 13001st speed

Rack travel in mm : 13.10...13.20

Del.guantity cm3/: 9.8...10.0

100 s: (9.6...10.2)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm : 6.4...6.6 Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

cm3 : 0.3Spread 100 s: (0.5)

(B) Satting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1450 1st speed

: 9.40...10.00 travel mm rpm : 1350

2nd speed

: 8.50...8.70 travel mm rpm : 500 3rd speed

: 2.70...3.30 travel mm

rpm : 300 4th speed

: 1.20...1.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1350

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed Aneroid pressure h: 1000

: 98.0...100.0 Del.quantity 1000 : (96.0...102.0)

cm3 : 3.50

1000 : (6.00)

RATED SPEED

Spread

1st version Control lever position degrees: 112...120 Testing: 1st rack travel in: 12.10 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1455...1485 Speed 4th rack travel in: 1550 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 74...82 Setting point w/out bumper spring Speed rpm : 300 nom Rack travel in mm: 6.5 Testing: Speed rpm : 200 Minimum rack trave: 8.00 rpm : 300 Speed Rack travel in mm : 6.40...6.60 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed man hPa : -Pressure : 10.30...10.40 Rack travel mm Measurement  $1/\min : 500$ Speed 1st pressure hPa : 200 Rack travel in m: 11.20...11.30 2nd pressure hPa : 350 Rack travel in m: 12.40...12.70 3rd pressure hPa : 1000 Rack travel in m: 13.10...13.20 START CUT-CUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm : 750 Speed

Del.quantity cm3/: 87.0...91.0 1000 s: (85.0...93.0)

cm3 : 5.00

1000 s: (7.0)

Aneroid pressure h: -Speed rpm: 500
Del.quantity cm3/: 36.0...38.0
1000 s: (34.0...40.0) **BREAKAWAY** 1st version 1mm rack travel less than full Load rack tr: 12.10 rpm : 1340...1350 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 100.0...110.0 1000 s: (97.0...113.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks: 10

Spread

Note remarks

Test sheet : MB

Edition : 13.03.92 Replaces : 02.92 Test oil : 180-4113

Combination no. : 0 403 446 304

Injection pump

Pump designation : PES6MW100/720RS1131

EP type number : 0 413 406 123

Governor

Governor design. : RQV300...1200MW50-26

Governer no. : 0 420 083 272

Customer—spec. information Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 115.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 715 089

Outside diameter x Wall thickness

x Length mn : 8.00x2.50x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 10.30...10.40

Del.quantity cm3/: 8.4...8.6

100 s: (8.2...8.8)

Spread cm3:0.3

100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 5.6...5.8
Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1250

travel mm : 7.40...7.80
2nd speed rpm : 880
travel mm : 4.90...5.10

3rd speed rpm : 500 travel mm : 2.70...3.30

4th speed rpm : 300 travel mm : 1.20...1.60

GUIDE SLEEVE FOSITION Control-lever position

-lever position Degree: -1

peed rpm: 1250

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200 Aneroid pressure h: 700

Del.quantity : 84.0...86.0

1000 : (82.0...88.0)

Spread cm3 : 3.50 1000 : (6.00)

1st version Control Lever 1st version position degrees: 107...115 Aneroid pressure h: 700 Speed rpm : 600 Del.quantity cm3/: 78.0...81.0 1000 s: (75.5...83.5) Testing: 1st rack travel in: 9.30 rpm : 1240...1250 Speed cm3 : 5.002nd rack travel in: 4.00 Spread 1000 s: (7.0) Speed rpm : 1325...1355 4th rack travel in: 1450 Aneroid pressure h: rpm : 500 rpm : 0.00...1.00 Speed Speed Del.quantity cm3/: 44.0...46.0 1000 s: (42.0...48.0) LOW IDLE 1 Control Lever position degrees: 74...82 BREAKAWAY Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.7 1st version 1mm rack travel less than Testing: full load rack tr: 9.30 Speed : 200 rom rpm : 1240...1250 Minimum rack trave: 7.50 Speed Speed rpm : 300 Rack travel in mm : 5.60...5.80 STARTING FUEL DELIVERY TORQUE CONTROL : 160 Speed Dimension a mm : 0.80 rpm Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0) Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 10.30...10.40 LOW IDLE 2nd speed rpm : 600 Rack travel in m: 11.00...11.20 3rd speed rpm : 1100 Rack travel in m: 10.30...10.60 rpm : 300 Speed Rack travel in mm : 5.60...5.80 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Aneroid/Altitude cm3 : 3.50Compensator Test Spread 1000 s: (5.50) Remarks: 1st version Setting : 500 Speed rpm hPa : -Pressure : 8.70...8.80 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 200 Rack travel in m: 9.00...9.10
2nd pressure hPa : 350
Rack travel in m: 10.20...10.50 3rd pressure hPa : 700 Rack travel in m: 11.00...11.20 START CUT-OUT 1/min: 220 (240) Speed

\*

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FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : IHC : 20.03.92 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 403 446 305

Injection pump

Pump designation: PES6MW100/320RS1204

: 0 413 406 192 EP type number

Governor

: RQV350...1350MW/6-45 Governor design.

: 0 420 083 275 Governer no.

Customer-spec. information Customer : NAVISTAR

: DTA-360 Engine

: 112.0 1st version kW : 2700 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

: 1 688 901 101 assembly

**Opening** 

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

: 1 680 750 008 Test Lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.25...3.35 : (3.20...3.40) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - \*

Time to cyl. no. : 1

BASIC SETTING

rpm: 1350 1st speed

Rack travel in mm : 9.20...9.30

Del.quantity cm3/: 8.7...8.9

100 s: (8.5...9.1)

cm3 : 0.3 Spread

100 s: (0.6)

rpm : 350.0 2nd speed Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 1.6...2.0 100 s: (1.3...2.2)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1450 1st speed

: 8.20...8.63 travel mm

rpm : 1350 2nd speed

: 7.40...7.60 travel mm

rpm : 500 3rd speed

: 2.50...3.10 travel mm

rpm : 350 4th speed

: 1.30...1.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1350 Speed

Aneroid pressure h: 900 Del.quantity

: 87.5...89.5 1000 : (85.5...91.5)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Control Lever

position degrees: 104...112

Testina:

1st rack travel in: 8.20

rpm : 1425...1455

2nd rack travel in: 4.00

Speed rpm : 1510...1520

4th rack travel in: 1650

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever position degrees: 72...80

Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 5.3

Testing:

rom : 100 Speed Minimum rack trave: 9.00

Speed rpm : 350 Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

rpm : 350...500 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom hPa : 900 Pressure

: 9.20...9.30 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 7.90...8.10

2nd pressure hPa : 175

Rack travel in m: 8.30...8.40
3rd pressure hPa : 300
Rack travel in m: 8.70...9.10

START CUT-OUT

1/min : 280 (290) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 54.5...58.5 1000 s: (52.5...60.5)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 8.20

rpm : 1425...1455 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...180.0

1000 s: (137.0...183.0)

Rack travel in mm : 13.00...14.00

LOW IDLE

Speed

rpm : 350

Rack travel in mm : 5.20...5.40 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

cm3 : 3.50 1000 s: (5.50) Spread

Remarks:

: IHC #1819541C91

In unlatched condition, do not operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before shutoff.

Note remarks

Test sheet : MB

Edition : 20.03.92

Replaces

Test oil : ISO-4113

Combination no. : 0 403 446 306

Injection pump

Pump designation : PES6MW100/720RS1131

EP type number : 0 413 406 123

Governor

Governor design. : RQV300...1300MW67-6

Sovermer no. : 0 420 083 274

Customer-spec. information Customer : MB-NFZ

customer : memorz

Engine : 0M 366 A

Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

**Opening** 

pressure, par : 172...175

Test lines : 1 680 715 089

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80

: (3.65...3.85)

Rack travel in mm: 9.00...12.00 Firing order: 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300

Tolerance  $+ - \cdot : 0.50 (0.75)$ 

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 8.8...9.0

100 s: (8.6...9.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 5.6...5.8

Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3 100 s: (0.5)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -1 Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 700

Del.quantity : 88.0...90.0 1000 : (86.0...92.0)

Spread cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 112...120

Testing:

1st rack travel in: 9.50

Speed rpm: 1340...1350

2nd rack travel in: 4.00

Speed rpm: 1440...1470 4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 74...82

Setting point w/out bumper spring : 300 Speed rpm Rack travel in mm : 5.7 Testina: rpm : 200 Speed Minimum rack trave: 7.50 rpm : 300 Rack travel in mm : 5.60...5.80 TORQUE CONTROL Dimension a mm : 0.80 Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 10.50...10.60 2nd speed rpm : 850 Rack travel in m: 11.20...11.40 3rd speed rpm : 1100 Rack travel in m: 10.70...10.90 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed וחסרו hPa : -Pressure : 9.20...9.30 Rack travel mm Measurement  $1/\min : 500$ Speed 1st pressure hPa : 300 Rack travel in m: 9.70...9.90 2nd pressure hPa : 400 Rack travel in m: 10.50...10.70 3rd pressure hPa : 700 Rack travel in in: 11.20...11.40 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 850 Speed Del.quantity cm3/: 88.0...91.0 1000 s: (85.5...93.5) cm3 : 5.00 1000 s: (7.0) Spread

BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.50 rpm : 1340...1350 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 80.0...90.0 1000 s: (77.0...93.0) LOW IDLE Speed rpm : 300
Rack travel in mm : 5.60...5.80
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks:

Speed

Aneroid pressure h: -

rpm : 500

Del.quantity cm3/: 49.0...51.0 1000 s: (47.0...53.0)

Note remarks

Test sheet : IHC

Edition : 27.03.92

Replaces

Test oil : ISO-4113

Combination no. : 0 403 446 307

Injection pump

Pump designation : PES6MW100/320RS1198

: 0 413 406 188 EP type number

Governor

: RQV350...1200MW46-46 Governor design.

: 0 420 083 276 Governer no.

Customer-spec. information Customer : NAVISTAR

Engine : DTA-466

: 157.0 1st version kW Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.25...3.35 Prestroke mm

: (3.20...3.40)

Rack travel in mm: 9.00...12.00 Firing order: 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasina

Tolerance + - \* : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 800

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 12.2...12.4

100 s: (12.0...12.6)

cm3 : 0.3Soread

100 s: (0.6)

rpm : 350.0 2nd speed

Rack travel in mm : 5.3...5.5 Rack travel in mm : 3.3...... Del.quantity cm3/ : 1.6...2.0 100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1450 1st speed

travel mm : 9.80...10.20

rpm : 1250 2nd speed

: 7.90...8.10 travel mm

rpm : 550 3rd speed

: 3.10...3.70 travel mm

rpm : 350 4th speed

: 1.30...1.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Aneroid pressure h: 1200

: 122.0...124.0 Del, quantity 1000 : (120.0...126.0)

: 3.50 cm3 Spread

1000 : (5.00)

RATED SPEED

1st version

Control lever position degrees: 102...110 Testing: 1st rack travel in: 10.50 rpm : 1270...1290 Speed 2nd rack travel in: 4.00 rpm : 1395...1405 Speed 4th rack travel in: 1550 rpm : 0.00...1.00Speed LCW IDLE 1 Control Lever position degrees: 66...74 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 5.4 Testina: Speed rpm : 100 Minimum rack trave: 9.00 : 350 Speed rom Rack travel in mm : 5.30...5.50 CONSTANT REGULATION : 300...450 Speed rpm Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 11.50...11.60

Measurement Speed 1/min: 500

1st pressure hPa : Rack travel in m: 8.80...8.90
2nd pressure hPa : 200
Rack travel in m: 9.50...9.60
3rd pressure hPa : 460
Rack travel in m: 10.60...11.00

START CUT-OUT

Speed 1/min: 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1200 Speed rpm : 1200 Del.quantity cm3/ : 118.5...122.5 1000 s: (116.5...124.5) Spread cm3: 5.00 1000 s: (7.0) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 70.0...72.0 1000 s: (68.0...74.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.50 Speed rpm : 1270...1290

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/: 130.0...170.0
1000 s: (125.0...175.0)
Rack travel in mm : 12.50...13.50

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: IHC #1819485C91 In unlatched condition, do not operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before shutoff.

#### Note remarks

: MAN 7,3 D 1 Test sheet : 23.10.91 Edition : 10.91 Replaces Test oil : ISO-4113

Combination no. : 0 403 456 116

Injection pump

Pump designation : PES6MW100/321RS1215

: 0 413 406 205 EP type number

Governor

Governor design. : RQ250/1200MW84-7 : 0 420 082 055 Governer no.

Customer-spec. information : MAN Customer

: D 0826 LF 04 Engine

: 199.0 1st version kW : 2400 Rated speed

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

## BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 13.60...13.70

Del.quantity cm3/: 16.3...16.5

100 s: (16.1...16.7)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 250.0 2nd speed Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 2.1...2.5 100 s: (1.8...2.7)

cm3 : 0.3 Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1320 1st speed

: 9.30...9.70 travel mm rpm : 1255 2nd speed : 6.50...6.70 travel mm

3rd speed

rpm : 360 : 3.90..4.50 rpm : 250 travel mm

4th speed

: 1.60...2.00 travel mm

# GUIDE SLEEVE POSITION

Control-lever position

Degree: 108 rpm : 600

Speed Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 1200

: 163.0...165.0 Del.quantity 1000 : (161.0...167.0) cm3 : 3.50

Spread 1000 : (6.00) RATED SPEED

1st version Control lever

position degrees: 91...99

Setting point:

Speed rpm : 600 Rack travel in mm: 20.0

Testina:

1st rack travel in: 12.60

rpm : 1245...1260 Speed

2nd rack travel in: 4.00

Speed rpm : 1340...1370 4th rack travel in: 1400

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 67...75

Setting point w/out bumper spring

rpm : 250 Rack travel in mm : 6.0

Testina:

: 150 Speed rpm

Minimum rack trave: 7.50 COM

Rack travel in mm : 5.90...6.10

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom hPa : 200 Pressure

: 10.00...10.10 Rack travel mm

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 9.70...9.80

2nd pressure hPa : 700

Rack travel in m: 12.30...12.60 3rd pressure hPa : 1200

Rack travel in m: 13.60...13.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

rpm : 600 Speed

Del.quantity cm3/: 167.0...170.0 1000 s: (164.5...172.5)

cm3 : 5.00Spread 1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 77.0...79.0
1000 s: (75.0...81.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 12.60

rpm : 1245...1260 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 70.0...90.0 1000 s: (67.0...93.0)

LOW IDLE

rpm : 250 Speed

Rack travel in mm : 5.90...6.10 Del.quantity cm3/: 21.0...25.0

1000 s: (18.5...27.5)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

: MAN #3-7137

Start-of-delivery mark is at start of

delivery of cylinder 1

Note remarks

: CUM Test sheet

: 27.03.92 Edition Replaces

: ISO-4113 Test oil

: 0 403 466 127 Combination no.

Injection pump

Pump designation : PES6MW100/120RS1137-

: 0 413 406 180 EP type number

Governor

: RSV550...1100MW2A335 Governor design.

: 0 420 085 185 Governer no.

Customer-spec. information Customer : CUMMINS

: 6 CTA-8.3 Engine

: 194.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.50...3.60 Prestroke mm

: (3.45...3.65) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 14.50...14.60

Del.quantity cm3/: 15.5...15.7

100 s: (15.3...15.9)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 550.0 2nd speed Rack travel in mm: 6.7...6.9

Del.quantity cm3/: 2.2...2.6

100 s: (2.0...2.9)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm: 0.30...1.00

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELTY. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Aneroid pressure h: 900

: 155.5...157.5 Del.quantity

1000 : (153.5...159.5)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 88...96

Setting point:

: 800 Speed 17001 Rack travel in mm: 0.6

Testina:

1st rack travel in: 13.50

rpm : 1145...1155 Speed

2nd rack travel in: 4.00

: 1215...1225 Speed rom

3rd rack travel in: 4.00

rpm : 1215...1245 Speed

4th rack travel in: 1350

rpm : 0.30...1.70 Speed

LOW IDLE 1

Control lever

position degrees: 68...76

Setting point wout bumper spring

rpm Rack travel in mm: 6.3

Testing:

: 100 Speed המת Minimum rack trave: 19.00

: 550 UDW.

Rack travel in mm : 6.20...6.40

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100 Rack travel in m: 14.50...14.60

2nd speed rpm : 750

Rack travel in m: 14.70...14.80

3rd speed rpm : 1000

Rack travel in m: 14.70...14.80

Aneroid/Altitude

Compensator Test

1st version

Setting Speed

: 500 riom

hPa : 900 Pressure

Rack travel mm

: 14.70...14.80

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 11.30...11.50

2nd pressure hPa : 370

Rack travel in m: 12.20...12.30

3rd pressure hPa : 575

Rack travel in m: 13.60...14.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

: 750 תמי Del.quantity cm3/: 156.0...160.0

1000 s: (154.0...162.0)

cm3 : 5.00Spread

1000 s: (7.0)

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 100.0...102.0

1000 s: (98.0...104.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.50

rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 130.0...150.0 1000 s: (127.0...153.0) Rack travel in mm: 19.00...21.00

LOW IDLE

rpm : 550 Speed

Rack travel in mm : 6.70...6.90

Del.quantity cm3/: 22.5...26.5

1000 s: (20.0...29.0)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

: CUM #3911657

Start-of-delivery mark or blockage = 8.5° cam rotation angle after start of

delivery for cylinder 1.

Adjust stop lever to 0.5...1.0 mm

before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 30...32 : 3.50...3.60 Note remarks Prestroke mm : (3.45...3.65) Rack travel in mm : 9.00...12.00 : CUM Test sheet Edition : 20.03.92 Firing order : 1-5-3-6-2-4 Replaces : ISO-4113 Test oil Combination no. : 0 403 466 128 : 0-60-120-180-240-300 Phasing Phasing Injection pump Tolerance + - ° : 0.50 (0.75) Pump designation : PES6MW100/120RS1137-Time to cyl. no. : 1 EP type number : 0 413 406 180 BASIC SETTING Governor Governor design. : RSV550...1100MW2A335 1st speed rpm: 1100 Governer no. : 0 420 085 196 Rack travel in mm : 13.30...13.40 Customer-spec. information Del.quantity cm3/: 14.0...14.2 Customer : CUMMINS : 6 CTA-8.3 100 s: (13.8...14.4) Engine : 176.0 cm3 : 0.31st version kW Spread Rated speed : 2200 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 550.0 2nd speed Rack travel in mm : 6.7...6.9 Del.quantity cm3/ : 2.2...2.6 Test oil inlet temp. °C : 38...42 100 s: (2.0...2.9) cm3 : 0.3Overflow valve Spread : 1 419 992 198 100 s: (0.5) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -3 rpm : 800 : 1 688 901 101 assembly Speed Rack travel in mm : 0.30...1.00 **Opening** : 207...210 pressure, bar Governor spring pre-tension Click setting x : 4.00Orifice plate diameter mm : 0,6 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test lines : 1 680 750 014 Speed rpm : 1100 Aneroid pressure h: 1000 Outside diameter Del.quantity : 140.0...142.0 1000 : (138.0...144.0) x Wall thickness cm3 : 3.50 : 6.00x2.00x600 x Length mm Spread 1000 : (6.00) (A) Injection pump setting values Insp. values in parentheses RATED SPEED Set equal delivery quant.

> 1st version Control lever

position degrees: 86...94

per values

BEGINNING OF DELIVERY

Setting point: Speed rpm Rack travel in mm: 0.6 Testing: 1st rack travel in: 12.30 rpm : 1145...1155 Speed 2nd rack travel in: 4.00 Speed rpm : 1215...1225 3rd rack travel in: 4.00 : 1215...1245 Speed rom 4th rack travel in: 1350 rpm : 0.30...1.70Speed LOW IDLE 1 Control lever position degrees: 66...74 Setting point w/out bumper spring CON Rack travel in mm: 6.3 Testina: Speed rpm: 100 Minimum rack trave: 19.00 rpm : 550 Rack travel in mm : 6.20...6.40 TORQUE CONTROL Torque control curve - 1st version rest speed rpm : 1100

Rack travel in m: 13.30...13.40

and speed rpm : 750 1st speed 2nd speed Rack travel in m: 14.00...14.10 3rd speed rpm : 1000 Rack travel in m: 14.00...14.10 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 1000 Pressure Rack travel mm : 14.00...14.10 Measurement  $1/\min : 500$ Speed

1st version Aneroid pressure h: 1000 Speed rpm Del.quantity cm3/: 153.0...157.0 1000 s: (151.0...159.0) Spread 1000 s: (7.0) Aneroid pressure h: rpm 500 Speed Del.quantity cm3/: 79.0...81.0 1000 s: (77.0...83.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.30 rpm : 1145...1155 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 130.0...150.0 LOW IDLE Spread Remarks: before stop.

1000 s: (127.0...153.0) Rack travel in mm : 19.00...21.00 Speed rpm : 550 Rack travel in mm : 6.70...6.90 Del.quantity cm3/: 22.5...26.5 1000 s: (20.0...29.0) cm3 : 3.50 1000 s: (5.50) : CUM #3921691 Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1 Adjust stop lever to 0.5...1.0 mm

cm3 : 5.00

1st pressure hPa : -

3rd pressure hPa : 650

Rack travel in m: 10.00...10.10 2nd pressure hPa : 450 Rack travel in m: 11.00...11.10

Rack travel in m: 12.60...13.00

FUEL DELIVERY CHARACTERISTICS

Note remarks

: LIE 5,6 B Test sheet : 03.04.92 Edition : 02.92 Replaces : ISO-4113 Test oil

: 0 403 474 008 Combination no.

Injection pump

Pump designation : PES4MW100/720RS1181

: 0 413 404 107 EP type number

Governor

Governor design. : RSV400...1000MW1A333 Governor no. : 0 420 085 118

Customer-spec, information Customer : LIEBHERR

: 914 Engine

1st version kW : 120.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 D49

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.00...3.10 Prestroke mm : (2.95...3.15)

Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

: 0-90-180-270 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 980 1st speed

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 15.3...15.5

100 s: (15.1...15.7)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm: 6.1...6.3

Del.quantity cm3/: 2.0...2.4

100 s: (1.7...2.6)

Spread cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm: 0.30...1.00

Governor spring pre-tension Click setting x : 3.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 980 Speed

: 153.0...155.0 Del.quantity 1000 : (151.0...157.0)

: 3.50 cm3

1000 : (6.00)

RATED SPEED

Spread

1st version

Control lever

position degrees: 96...104

Setting point:

: 800 Speed Rack travel in mm: 0.6

Testing:

F08

1st rack travel in: 11.20 rpm : 1020...1030 Speed 2nd rack travel in: 4.00 Speed rpm : 1050...1080 4th rack travel in: 1175 rpm : 0.30...1.70Speed LOW IDLE 1 Control lever position degrees: 70...78 Setting point wout bumper spring rpm : 400 Rack travel in mm: 5.7 Testing: rpm : 100 Speed Minimum rack trave: 19.00 rpm : 400 Speed Rack travel in mm : 5.60...5.80 Rack travel in mm : 2.00 : 480...540 Sræd MOM TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 980 Rack travel in m: 12.20...12.30 2nd speed rpm : 600 Rack travel in m: 12.20...12.30 rpm : 450 5th speed Rack travel in m: 13.00...13.20 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/ : 154.5...157.5 1000 s: (152.0...160.0) cm3 : 3.50 1000 s: (7.0) Spread **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.20 rpm : 1020...1030 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 130.0...140.0 1000 s: (127.0...143.0) Rack travel in mm : 19.00...21.00 LOW IDLE

Remarks:

E09

#### Note remarks

Test sheet

: 13.03.92 Edition : 02.92 Replaces : ISO-4113 Test oil

Combination no. : 0 403 474 022

Injection pump

Pump designation : PES4MW100/720RS1151

EP type number : 0 413 404 104

Governor

: RSV350...1300WW0A329 Governor design.

-12

: 0 420 085 189 Governer no.

Customer-spec. information : MB-NFZ Customer

: 0M364A Engine

: 79.0 1st version kW Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

: 0-90-180-270 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1280 1st speed

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 8.2...8.4

100 s: (8.0...8.6)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.0 2nd speed Rack travel in mm: 6.0...6.8

Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6) cm3 : 0.3 Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...1.00

Governor spring pre-tension Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1280 Speed Aneroid pressure h: 700

: 82.0...84.0 Del.quantity 1000 : (80.0...86.0)

: 3.50 cm3

1000 : (6.00)

## RATED SPEED

Spread

1st version

Control lever

position degrees: 95...103

Setting point:

: 800 rpm Speed Rack travel in mm: 0.6

Testina:

1st rack travel in: 9.90 rom : 1320...1330 Speed 2nd rack travel in: 4.00 Speed rpm : 1390...1420 4th rack travel in: 1550 rom : 0.30...1.70Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm: 350 Rack travel in mm: 6.4 Testing: rom : 100 Speed Minimum rack trave: 19.00 Speed rom : 350 Rack travel in mm : 6.00...6.80 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1280 Rack travel in m: 10.90...11.00 2nd speed rpm : 600
Rack travel in m: 11.80...11.90
3rd speed rpm : 1000 Rack travel in m: 11.70...11.90 4th speed rpm : 1175 Rack travel in m: 11.00...11.30 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed riom hPa : Pressure : 9.80...10.00 Rack travel mm Measumement  $1/\min : 500$ Speed 1st pressure hPa : 200 Rack travel in m: 10.70...10.90 2nd pressure hPa : 300 Rack travel in m: 11.20...11.40 3rd pressure hPa : 700 Rack travel in m: 11.70...11.80 FUEL DELIVERY CHARACTERISTICS

Spread cm3:5.00
1000 s: (7.0)
Aneroid pressure h: Speed rpm:500
Del.quantity cm3/: 46.0...48.0
1000 s: (44.0...50.0)

BREAKAWAY
1st version
1mm rack travel less than
full load rack tr: 9.90
Speed rpm: 1320...1330

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.00...6.80
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Test hydr. locking device for starting with 800...1200 hPa air pressure.

Speed

1st version

Aneroid pressure h: 700

rpm : 600

Del.quantity cm3/: 75.0...78.0 1000 s: (72.5...80.5) BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : IHC 7,7 C : 13.03.92 Test sheet Edition : 12.91 Replaces Test oil : ISO-4113 Combination no. : 0 403 476 111 Injection pump : PES6MW100/320RS1198-Pump designation : 0 413 406 211 EP type number Governor Governor design. : RSV350...125UMW2A347 : 0 420 085 182 Governer no. Customer-spec. information Customer : NAVISTAR : DT-466 Engine : 156.0 1st version kW : 2500 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 038 Inlet press., bar: 2.80 Test nozzle holder : 1 688 901 101 assembly Openina : 207...210 pressure, bar Orifice plate diameter mm : 0,6 Test lines : 1 680 750 008 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm (A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant. per values \_\_\_ BEGINNING OF DELIVERY Test pressure, bar: 30...32 E12

: 3.25...3.35 Prestroke mm : (3.20...3.40) Rack travel in mm : 9.00...12.00 : 1-5- 3- 6- 2- 4 Firing order : 0-60-120-180-240-300 Phasing Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm : 1250Rack travel in mm : 11.60...11.70 Del.quantity cm3/: 12.3...12.5 100 s: (12.1...12.7) cm3 : 0.3Spread 100 s: (0.6) rpm : 350.0 2nd speed Rack travel in mm : 4.9...5.1 Del.quantity cm3/ : 1.5...1.9 100 s: (1.3...2.2) cm3 : 0.3Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...1.00 Governor spring pre-tension Click setting x : 2.80FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1250 Speed Aneroid pressure h: 900 : 123.0...125.0 Del.quantity 1000 : (121.0...127.0) : 3.50 cm3 Spread 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 100...108

Setting point:

Speed

: 800

rpm

Rack travel in mm: 0.6 Testing: 1st rack travel in: 10.60 rpm : 1290...1300 Speed 2nd rack travel in: 4.00 rpm : 1350...1360 Speed 3rd rack travel in: 4.00 rpm : 1340...1370 Speed 4th rack travel in: 1500 rpm : 0.30...1.70 Speed LOW IDLE 1 Control lever position degrees: 70...78 Setting point w/out bumper spring rpm : 350 Rack travel in mm : 5.0 Testing: rpm : 100 Speed Minimum rack trave: 19.00 rpm : 350 Rack travel in mm : 4.90...5.10 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : -Pressure Rack travel mm : 9.00...9.10 Measurement  $1/\min : 500$ Speed 1st pressure hPa : 265 Rack travel in m: 10.00...10.10 2nd pressure hPa : 455 Rack travel in m: 10.80...11.20 3rd pressure hPa : 900 Rack travel in m: 11.60...11.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 500 Speed

full load rack tr: 10.60 rpm : 1290...1300 Speed STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 160.0...180.0 1000 s: (155.0...185.0) Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 350 Speed Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 15.5...19.5 1000 s: (13.0...22.0) cm3 : 3.50 Spread 1000 s: (5.00)

Remarks:

: CUM #1818555C91

**BREAKAWAY** 

1st version 1mm rack travel less than

Del.quantity cm3/: 79.5...83.5 1000 s: (77.5...85.5)

: 3.60...3.70 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (3.55...3.75) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks Firing order Test sheet : 27.03.92 Edition Replaces : 0-60-120-180-240-300 : ISO-4113 Phasing Test oil : 0.50 (0.75) Tolerance + - ° Combination no. : 0 403 476 113 BASIC SETTING Infection pump Pump designation : PES6MW100/720RS1131rpm: 1200 1st speed : 0 413 406 165 EP type number Rack travel in mm : 11.00...11.20 Governor : RSV350...1200PW0A342 Governor design. Del.quantity cm3/: 7.6...7.8 : 0 420 085 187 Governer no. 100 s: (7.4...8.0) Customer-spec. information cm3 : 0.3Spread : MB-NFZ Customer 100 s: (0.6) : OM 366 LA Engine 2nd speed rpm : 350.0 Rack travel in mm : 5.5...6.0 Del.quantity cm3/: 0.9...1.3 : 132.0 1st version kW : 2400 Rated speed 100 s: (0.6...1.5) TEST BENCH REQUIREMENTS cm3 : 0.3Spread 100 s: (0.5) Test oil inlet temp. °C : 38...42 GUIDE SLEEVE POSITION Control-lever position Overflow valve : 1 419 992 198 Degree: -3 rpm : 800 Rack travel in mm : 0.30...1.00 Inlet press., bar: 1.50 Governor spring pre-tension Test nozzle holder : 0 681 343 009 Click setting x : 3.00assembly FULL LOAD DELIV. AT FULL LOAD STOP **Opening** pressure, bar : 172...175 1st version rpm : 1200 Speed Aneroid pressure h: 700 Test lines : 1 680 750 089 : 76.0...78.0 Del.quantity 1000 : (74.0...80.0) Outside diameter : 3.50 x Wall thickness Spread cm3 1000 : (6.00) : 8.00x2,50x600 x Length mm RATED SPEED (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Control Lever per values \_\_\_ position degrees: 96...104 BEGINNING OF DELIVERY Setting point: Test pressure, bar: 30...32

Speed

Rack travel in mm: 0.6

Testina: 1st rack travel in: 10.10 Speed rpm : 1240...1245 \* 2nd rack travel in: 4.00 rpm : 1280...1293 Speed 3rd rack travel in: 4.00 rpm : 1300...1330 Speed 4th rack travel in: 1450 Speed rpm : 0.30...1.705th rack travel in: 1240...1255 Speed rpm : 10.10 LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 5.2 Testing: Speed rpm : 100 Minimum rack trave: 19.00 : 350 LDW Rack travel in mm : 5.00...5.50 Rack travel in mm : 2.00 rom : 400...460 Speed TORQUE CONTROL Dimension a mm : 1.10 Torque control curve - 1st version rpm : 1200 1st speed Rack travel in m: 11.00...11.20 and speed rpm : 600 Rack travel in m: 12.10...12.30 2nd speed 3rd speed rpm : 1000 Rack travel in m: 11.50...11.70 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 Pressure hPa : -: 10.10...10.30 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 200 Rack travel in m: 11.00...11.20
2nd pressure hPa : 300
Rack travel in m: 11.60...11.80
3rd pressure hPa : 700 Rack travel in m: 12.10...12.30

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10 Speed rpm : 1240...1245

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 100.0...110.0 1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.50...6.00
Del.quantity cm3/: 9.0...13.0
1000 s: (6.5...15.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

\* Read off speed set under 1. Add 40...48 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

Test hydr. locking device for starting with 800...1200 hPa air pressure.

Set pneumatic shutoff device to control-rod stop = 0.5...1.5 mm control-rod travel at 4.5 bar atmospheric pressure.

FUEL DELIVERY CHARACTERISTICS

Firing order : 1-5-3-6-2-4 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : 0-60-120-180-240-300 Phasing Test sheet : 20.03.92 Edition : 0.50 (0.75) Tolerance + - \* Replaces : ISO-4113 Test oil BASIC SETTING : 0 403 476 117 Combination no. rpm: 11801st speed Injection pump Pump designation : PES6MW100/720RS1131-Rack travel in mm : 13.20...13.30 Del.quantity cm3/: 10.6...10.8 : 0 413 406 165 EP type number Governor 100 s: (10.4...11.0) : RSV750...1200MW0A329 Governor design. cm3 : 0.3: 0 420 085 193 Spread Governer no. 100 s: (0.6) Customer-spec. information : MB-NFZ Customer 2nd speed rpm : 750.0 Rack travel in mm : 5.8...6.3 : 0M366LA Engine Del.quantity cm3/: 1.0...1.4 Rated speed : 2400 100 s: (0.7...1.6) cm3 : 0.3TEST BENCH REQUIREMENTS Spread 100 s: (0.5) Test oil GUIDE SLEEVE POSITION inlet temp. °C : 38...42 Control-lever position Degree: -3 Overflow valve rpm : 800 : 1 419 992 198 Rack travel in mm: 0.30...1.00 Inlet press., bar: 1.50 Governor spring pre-tension Click setting x : 6.00Test nozzle holder : 0 681 343 009 assembly FULL LOAD DELIV. AT FULL LOAD STOP **Opening** : 172...175 1st version pressure, bar rpm : 1180Speed Aneroid pressure h: 1000 Del.quantity: 106.0...108.0 : 1 680 750 089 Test lines 1000 : (104.0...110.0) cm3 : 3.50 Outside diameter Spread 1000 : (6.00) x Wall thickness : 8.00x2,50x600 x Length mm RATED SPEED (A) Injection pump setting values Insp. values in parentheses 1st version Control lever Set equal delivery quant. position degrees: 82...90 per values Setting point: BEGINNING OF DELIVERY : 800 Speed Test pressure, bar: 30...32 rpm Rack travel in mm: 0.6 : 3.60...3.70 Prestroke mm : (3.55...3.75) Testing:

1st rack travel in: 12.20

Rack travel in mm : 9.00...12.00

rpm : 1230...1235 \* Speed

2nd rack travel in: 4.00

rpm : 1310...1318 Speed

4th rack travel in: 1500

rpm : 0.30...1.70Speed

LOW IDLE 1 Control lever

position degrees: 70...78

Setting point w/out bumper spring

rpm : 750 Rack travel in mm: 6.0

Testing:

Speed : 100 COM Minimum rack trave: 19.00 rpm : 750 Speed

Rack travel in mm : 5.80...6.30

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed mon

hPa : -Pressure

: 10.10...10.20 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : 350

Rack travel in m: 11.30...11.40

2nd pressure hPa : 500

Rack travel in m: 12.40...12.70 3rd pressure hPa : 1000

Rack travel in m: 13.20...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed : 600 rpm

Aneroid pressure h: -

: 500 Speed rpm

Del.quantity cm3/: 35.0...37.0 1000 s: (33.0...39.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 12.20

rpm : 1230...1235 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 750
Rack travel in mm : 5.80...6.30
Del.quantity cm3/: 10.0...14.0

1000 s: (7.5...16.5)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

Test hydr. locking device for starting with 800...1200 hPa air pressure.

\* Read off speed set under 1. Add 80...88 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

: 3.60...3.70 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (3.55...3.75) Rack travel in mm : 9.00...12.00 Note remarks : 1-5- 3- 6- 2- 4 Firing order Test sheet : 03.04.92 Edition Replaces : 0-60-120-180-240-300 : TSO-4113 Phasing rest oil Tolerance + - \* : 0.50 (0.75) : 0 403 476 120 Combination no. BASIC SETTING Injection pump : PES6MN100/720RS1131-Pump designation rpm: 700 1st speed : 0 413 406 165 EP type number Rack travel in mm : 12.50...12.60 Governor : RSV350...750MW0A336-Governor design. Del.quantity cm3/: 8.5...8.7 : 0 420 085 198 Governer no. 100 s: (8.3...8.9) Customer-spec, information cm3 : 0.3Spread Customer : MB-NFZ 100 s: (0.6) : 0M 366 LA Engine rpm : 350.0 2nd speed : 87.0 1st version kW Rack travel in mm : 5.8...6.8 Del.quantity cm3/: 0.9...1.3 Rated speed : 1500 100 s: (0.6...1.5) TEST BENCH REQUIREMENTS cm3 : 0.3Spread 100 s: (0.5) Test oil inlet temp. °C : 38...42 GUIDE SLEEVE POSITION Control-lever position Overflow valve : 1 419 992 198 Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...1.00 Inlet press., bar: 1.50 Governor spring pre-tension Test nozzle holder : 0 681 343 009 Click setting x : 2.80 assembly FULL LOAD DELIV. AT FULL LOAD STOP **Opening** : 172...175 pressure, bar 1st version rpm : 700 Speed : 85.0...87.0 : 1 680 750 089 Test lines Del.quantity 1000 : (83.0...89.0) : 3.50 Outside diameter Spread cm3 1000 : (6,00) x Wall thickness : 8.00x2.50x600 x Length mm RATED SPEED (A) Injection pump setting values Insp. values in parentheses 1st version Control lever Set equal delivery quant. position degrees: 74...82 per values Setting point: BEGINNING OF DELIVERY : 800 Test pressure, bar: 30...32 Speed

Rack travel in mm: 0.6

Testing:

1st rack travel in: 11.50 Speed rpm: 750...755 \* 2nd rack travel in: 4.00

rpm : 775...783 Speed

4th rack travel in: 850

rpm : 0.30...1.70 Speed

LOW IDLE 1 Control lever

position degrees: 60...68

Setting point w/out bumper spring

rpm : 350 Rack travel in mm: 6.3

Testina:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 350

Rack travel in mm : 5.80...6.80

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

# **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 11.50 Speed rpm : 750...755 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 88.0...98.0 1000 s: (85.0...101.0)

# LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.80...6.80
Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5)

cm3 : 3.50

Spread 1000 s: (5.50)

## Remarks:

\* Read off speed set under 1. Add 25...33 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

Note remarks

Test sheet : SFA Edition : 13.4.92

Replaces

: ISO-4113 Test oil

Combination no. : 0 406 036 032

Injection pump

: PE6ZWM150/520/3LS33 Pump designation

: 0 416 056 003 EP type number

Governor

: RQUV320...775ZWA64R Governor design.

: 0 422 409 034 Governer no.

Customer-spec. information Customer : SFAC

: S1 DHR1 Engine

: 440.0 1st version kW : 1550 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. \*C : 40...45

Overflow valve

: 2 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 443 022 assembly

Openina

: 172...175 pressure, bar

: 1 680 750 027 Test lines

Outside diameter

x Wall thickness

x Length mm : 8.00X2.00X1500

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm: 12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - " : 0.50 (0..75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 600

Rack travel in mm: 12.00

Del.quantity cm3/: 33.5...34.5

100 s: (33.3...34.7)

Spread cm3 : 1.0

100 s: (1.5)

2nd speed rpm : 600 Rack travel in mm: 9.00

Del.quantity cm3/: 20.0...22.0

100 s: (19.5...22.5)

cm3 : 1.0 Spread 100 s: (1.5) rpm : 200

3rd speed Rack travel in mm : 9.00

Del.quantity cm3/: 9.5...12.5

100 s: (8.8...13.2)

Spread cm3 : 1.0100 s: (1.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: 74...80 rpm : 775 Speed Rack travel in mm : 14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 775 Speed

: 475.0...485.0 Del.quantity : (472.0...488.0) 1000

: 10.0 Spread cm3

1000 : (15.0)

RATED SPEED

1st version

Control lever

position degrees: 74...80

Testing:

1st rack travel in: 13.00

rpm : 810...830 Speed

2nd rack travel in: 7.00

Speed rpm : 835...875 3rd rack travel in: 2.00 rom : 855...930 Speed 4th rack travel in: 865...955 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 21...27 Testing: : 200 Speed rpm Minimum rack trave: 12.50 rpm : 250 Speed Rack travel in mm : 11.50...14.00 Rack travel in mm: 8.00 : 320 Speed rpm : 500 Speed rpm Maximum rack trave: 3.30 rpm : 300 Speed Rack travel in mm: 9.15 Rack travel in mm: 6.25 rom : 340...360 Speed LOW IDLE 2 Control lever position degrees: 21...27 Testing: Speed rpm : 550 Rack travel in mm : 0.00...1.70 Speed rpm : 600 Rack travel in mm : 0.00...1.00 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.00 rpm : 810...830 Speed STARTING FUEL DELIVERY Speed rpm : 250 Del.quantity cm3/ : 380.0... 1000 s: (-) Rack travel in mm: 24.00 LOW IDLE Speed rpm : 320 Rack travel in mm : 8.00 Del.quantity cm3/: 80.0...100.0 1000 s: (-) cm3 : 10.0Spread 1000 s: (15.0)

Remarks:
APPLICATION
Rail car

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00 Firing order : 1-5- 3- 6- 2- 4 BOSCH INLI. PUMP TEST SPECIFICATIONS Note remarks Test sheet : CUM Edition : 13.03.92 Replaces : 0-60-120-180-240-300 : ISO-4113 Phasing Test oil Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ Combination no. : 9 400 083 449DD Injection pump Time to cyl. no. : 1 Pump designation : PES6A100b320/3RS2691 : 9 410 230 025 BEGINNING OF DELIVERY DIFFERENCE EP type number Governor : RSV400...1100A2C2209 betw. rack trav. m: 9.00...12.00 Governor design. & maximum rack tra: 21.00 Difference CS: 3.00...4.00 : 9 420 083 201 Governer no. BASIC SETTING Cust. part no. : 3354913 rpm: 1175 1st speed Customer-spec. information Customer : CUMMINS Rack travel in mm: 10.10...10.20 : 6 CT 8.3 L Engine Del.quantity cm3/: 8.7...8.9 : 129.1 1st version kW 100 s: (8.5...9.1) Rated speed : 2200 cm3 : 0.3TEST BENCH REQUIREMENTS Spread 100 s: (0.6) Test oil inlet temp. °C : 38...42 2nd speed rpm : 400.0Rack travel in mm: 5.6...5.8 Overflow valve Del.quantity cm3/: 1.6...2.0 : 1 417 413 047 100 s: (1.4...2.3) cm3 : 0.3Spread Inlet press., bar: 1.50 100 s: (0.5) Test nozzle holder GUIDE SLEEVE POSITION : 0 681 343 009 assembly Control-lever position Degree: -3 Openina rpm : 800 : 172...175 pressure, bar Rack travel in mm : 0.30...0.70 Governor spring pre-tension Test lines : 1 680 750 014 Click setting x : 2.50 Outside diameter FULL LOAD DELIV. AT FULL LOAD STOP x Wall thickness : 6.00x2.00x600 x Length mm 1st version rpm : 1175 (A) Injection pump setting values Speed 87.5...89.5 1000 : (85.5...91.5) Insp. values in parentheses Del.quantity Set equal delivery quant. : 3.50 per values \_ Spread cm3 1000 : (6.00)BEGINNING OF DELIVERY

RATED SPEED

Test pressure, bar: 25...27

1st version Control Lever

position degrees: 87...95

Testing:

1st rack travel in: 9.10

rpm : 1215...1225 Speed

2nd rack travel in: 4.00

Speed rpm : 1245...1275 4th rack travel in: 1400

rpm : 0.30...1.70 Speed

LOW IDLE 1

Control lever

position degrees: 62...70

Setting point w/out bumper spring

Speed rpm : 400 Rack travel in mm: 5.2

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

rpm : 400 Speed

Rack travel in mm : 5.60...5.80

Rack travel in mm : 2.00

Speed rom : 570...630

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1175 1st speed

Rack travel in m: 10.10...10.20

2nd speed rpm : 500 Rack travel in m: 11.30...11.50

4th speed npm : 800

Rack travel in m: 10.70,..10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500 Del.quantity cm3/ : 90.5...93.5 1000 s: (88.0...96.0)

: 800 Speed rom

Del.quantity cm3/: 92.5...95.5

1000 s: (90.0...98.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.10

rpm : 1215...1225 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

E23

Del.quantity cm3/: 135.0...149.0

1000 s: (132.0...152.0) Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.60...5.80 Del.quantity cm3/: 16.5...20.5

1000 s: (14.0...23.0)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

Start-of-delivery mark 11° cam angle

after start of delivery cyl. 1

Note remarks

: CUM 5,9 x : 24.10.91 Test sheet Edition : 09.91 Replaces

: ISO-4113 Test oil

: 9 400 083 459 Combination no.

Injection pump

Pump designation : PES6A95D120RS2822

: 9 400 084 029 EP type number

Governor

: RCV350...1250AB1235-Governor design.

: 9 420 080 311 Governer no.

Customer-spec. information : CUMMINS Customer

: 6 BT Engine

1st version kW : 119.3 : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test rozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 014 Test lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.75...2.85 Prestroke mm

: (2.70...2.90)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 8.6...8.8

100 s: (8.4...9.0)

cm3 : 0.3 Spread

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 5.0...5.2

Del.quantity cm3/: 0.6...1.0

100 s: (0.4...1.2)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1300 1st speed

: 6.80...5.90 travel mm

: 350 2nd speed rom

: 1.20...1.70 travel mm

: 700 3rd speed rpm

: 4.00...4.50 travel mm

: 1550 4th speed rpm

: 8.30...8.20 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1530

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed Aneroid pressure h: 600

Del.quantity : 80.0...90.0)

: 3.50 cm3 Spread : (6.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 107...115

Testina:

1st rack travel in: 11.70

Speed rpm: 1310...1320 2nd rack travel in: 4.00

rpm : 1545...1575 Speed

4th rack travel in: 1750

Speed rom : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 63...71

Testing:

Speed rpm : 100

Minimum rack trave: 7.00

Speed rpm : 350 Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

rpm : 475...575 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed man

hPa : 600 Pressure

: 12.70...12.80 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.60...11.90

2nd pressure hPa : 320 Rack travel in m: 12.00...12.10

3rd pressure hPa : 410

Rack travel in m: 12.40...12.60

START CUT-OUT

1/min : 270 (290) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 600

npm : 700 Speed

Del.quantity cm3/: 80.0...83.0

1000 s: (77.5...85.5)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 64.0...67.0 1000 s: (62.0...69.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.70

rpm : 1310...1320 Speed

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/: 135.0...155.0
1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 5.00...5.20

Del.quantity cm3/: 6.0...10.0

1000 s: (4.0...12.0)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

Start-of-delivery mark at 10° cam

rotation angle after start of delivery,

cylinder 1

Note remarks

: FOR 7,8 i Test sheet Edition : 13.03.92 : 08.91 Replaces : ISO-4113 Test oil

Combination no. : 9 400 087 419

Injection pump

Pump designation : PES6P120A720RS3234 : 9 400 087 068 EP type number

Governor

: RQV350...1150PA923-2 Governor design.

: 9 420 080 274 Governer no.

Customer-spec. information : FORD (FNH) Customer

: 7.8 Ltr Engine

1st version kW : 156.6 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 072

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 85...95

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test Lines

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.35...2.45 Prestroke mm

: (2.30...2.50) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - \*

Time to cyl. no. : 1

BASIC SETTING

rpm : 1150 1st speed

Rack travet in mm : 13.50...13.60

Del.quantity cm3/: 15.8...16.0

100 s: (15.5...16.3)

cm3 : 0.5 Spread

100 s: (0.9)

rpm : 350.0 2nd speed

Rack travel in mm : 5.6...5.8 Del.quantity cm3/ : 2.6...3.2

100 s: (2.4...3.4)

cm3 : 0.5 Spread 100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1200 1st speed

: 9.50...9.70 travel mm

rpm : 1000 2nd speed

: 7.80...8.00 travel mm

3rd speed : 800 man

: 6.40...6.80 travel mm

: 450 4th speed riom 3.80...4.00

travel mm

: 350 : 2.20...2.50 5th speed rpm

travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed Aneroid pressure h: 900

Del.quantity : 130.3...163.5)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 12.50

rpm: : 1210...1220 Speed

2nd rack travel in: 4.00

Speed rpm : 1335...1365 4th rack travel in: 1420

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 61...69

Testing:

nom : 275 Speed Minimum rack trave: 6.70 rpm : 350

Rack travel in mm : 5.60...5.80

CONSTANT REGULATION

rpm : 390...460 Speed

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 1150 Rack travel in m: 13.50...13.60

: 750 2nd speed rpm

Rack travel in m: 12.40...12.60

3rd speed rpm : 550

Rack travel in m: 11.30...11.70

Aneroid/Altitude

Compensator Test

1st version

Setting

: 1150 Speed **MC1** hPa : 900 Pressure

: 13.50...13.60 Rack travel mm

Measurement

1/min: 1150 Speed

1st pressure hPa : - Rack travel in m: 8.50...8.90

2nd pressure hPa : 300 Rack travel in m: 10.10...10.20

3rd pressure hPa : 500

Rack travel in m: 12.20...12.60

STAR! CUT-OUT

1/min: 290 (310) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 : 750

rom Speed Del.quantity cm3/: 165.0...171.0

1000 s: (162.0...174.0)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 106.5...110.5 1000 s: (104.5...112.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50

rpm : 1210...1220 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 150.0...190.0

1000 s: (146.0...194.0)

Rack travel in mm : 11.60...12.40

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 5.60...5.80

Del.quantity cm3/: 26.5...32.5 1000 s: (24.5...34.5) Spread cm3 : 5.00 1000 s: (3.00)

Remarks:

Set shutoff stop 1.5...2.0 mm before

shutoff.

Note remarks

: MB Test sheet

Edition : 13.03.92

Replaces

: ISO-4113 Test oil

Combination no. : 9 400 087 429

Injection pump

Fump designation : PES6P12DA72ORS3256-3

EP type number : 9 400 087 079

Governor

Governor design. : RQV300...1300PA963

: 9 420 080 283 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: OM 366 LA Engine

: 156.6 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test rozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 C67

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10

: (2.95...3.15) Rack travel in mm : 21.00...0.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 4.80...5.40

Deliquantity cm3/: 1.7...2.0

100 s: (1.4...2.3)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 300.0 Rack travel in mm : 7.2...7.5

Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 0.80...1.30 travel mm

2nd speed rpm : 660

: 3.80...4.30 travel mm

rpm : 960 3rd speed

: 5.20...5.70 travel mm

4th speed rpm : 1357

: 8.00...8.50 travel mm

: 1492 5th speed rpm

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1385 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 1000 Speed : 17.0...20.0 Del.quantity 1000 : (14.0...23.0) : 2.00 cm3 Spread 1000 : (3.00) RATED SPEED 1st version Control lever position degrees: 107...115 Testing: 1st rack travel in: 10.80 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1420...1450 Speed 4th rack travel in: 1550 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 73...81 Testina: : 100 Speed rom Minimum rack trave: 9.00 Speed rpm : 300 Rack travel in mm : 7.30...7.50 CONSTANT REGULATION rpm : 300...450 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed **PDM** hPa : 1100 Pressure : 11.80...12.00 Rack travet mm Measurement  $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 9.30...9.60 2nd pressure hPa : 300 Rack travel in m: 10.00...10.20 3rd pressure hPa : 600 Rack travel in m: 11.20...11.40 START CUT-OUT 1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1100 Speed rpm : 1300 Del.quantity cm3/: 157.0...159.0 1000 s: (154.0...162.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1100 : 800 Speed rpm Del.quantity cm3/: 141.0...147.0 1000 s: (138.0...150.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm Del.quantity cm3/: 55.0...57.0 1000 s: (52.0...60.0) Spread cm3 : 8.00 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.80

Speed rpm : 100 Del.quantity cm3/ : 90.0...110.0 1000 s: (86.0...114.0)

STARTING FUEL DELIVERY

rpm : 1340...135G

LOW IDLE

Speed

pread cm5 : 8.00 1000 s: (12.00)

Remarks:

Start-of-delivery blocking at start of delivery of cylinder no. 1.

### Note remarks

Test sheet

: 13.03.92 Edition

Replaces

: ISO-4113 Test oil

: 9 400 087 430 Combination no.

Injection pump

Pump designation : PES6P120A720RS3256-3

: 9 400 087 079 EP type number

Governor

Governor design. : RQV300...1300PA963-1

: 9 420 080 284 Governer no.

Customer-spec, information

: MERCEDES-BENZ Customer

: OM 366 LA Engine

: 171.5 1st version kW : 2600 Rated speed

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

**Opening** 

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 : (2.95...3.15) Prestroke mm

Rack travel in mm : 21.00...0.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 4.80...5.40

Del.guantity cm3/: 1.7...2.0

100 s: (1.4...2.3)

cm3 : 0.2Spread

100 s: (0.3)

2nd speed rpm : 300.0 Rack travel in mm : 7.2...7.5

Del.quantity cm3/: 1.0...1.6 100 s: (0.7...1.9)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 3001st speed

: 0.80...1.30 travel mm

2nd speed rpm : 660

: 3.80...4.30 travel mm

3rd speed rpm : 960

: 5.20...5.70 travel mm

rpm : 1357 4th speed

: 8.00...8.50 travel mm

rpm : 1492 5th speed

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1385 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 1000 Speed Del.quantity : 17.0...20.0 1000 : (14.0...23.0) cm3 : 2.00 Spread 1000 : (3.00) RATED SPEED 1st version Control Lever position degrees: 107...115 Testing: 1st rack travel in: 11.60 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1430...1460 Speed 4th rack travel in: 1550 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 73...81 Testing: Speed : 100 rpm Minimum rack trave: 9.00 : 300 rpm Rack travel in mm : 7.30...7.50 CONSTANT REGULATION rpm : 300...450 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : 1200 Pressure Rack travel mm : 12.60...12.80 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.30...9.60 2nd pressure hPa : 300 Rack travel in m: 10.00...10.20 3rd pressure hPa : 700 Rack travel in m: 11.60...11.80 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1200 rpm : 1300 Speed Del.quantity cm3/: 177.0...179.0 1000 s: (174.0...182.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1200 : 800 Speed rpm Del.quantity cm3/: 159.0...165.0 1000 s: (156.0...168.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 55.0...57.0 1000 s: (52.0...60.0) cm3 : 8.00Spread 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.60

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 100.0...120.0 1000 s: (96.0...124.0)

rpm : 1340...1350

LOW IDLE

Speed

Speed rpm : 300
Rack travel in mm : 7.20...7.50
Del.quantity cm3/ : 10.0...16.0
1000 s: (7.0...19.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Start-of-delivery blocking at start of delivery of cylinder no. 1.

Note remarks

Test sheet

: 13.03.92 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 9 400 087 433

Injection pump

Pump designation : PES6P120A720LS7176 : 0 412 726 821

EP type number

Governor

Governor design: RQ300/1050PA911-4

Governer no. : 9 420 080 318

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M447 A Engine

1st version kW : 210.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35) Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 6

BASIC SETTING

rom: 600 1st speed

Rack travel in mm : 14.50...14.70

Del.quantity cm3/: 21.5...21.7

100 s: (21.2...22.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 6.0...6.4

Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9) cm3 : 0.6

Spread

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm: 600 Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed

Aneroid pressure h: 800

: 215.5...217.5 Del.quantity

1000 : (212.5...220.5)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point: Speed

rpm

Rack travel in mm: 20.0

Testina: 1st rack travel in: 12.60 rpm : 1095...1110 2nd rack travel in: 4.00 Speed rpm : 1160...1190 4th rack travel in: 1260 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm Rack travel in mm: 6.2 Testing: Speed : 200 rpm Minimum rack trave: 7.70 : 300 rpm Rack travel in mm : 6.00...6.40 Rack travel in mm: 2.00 : 380...420 Speed rpm TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 13.60...13.80 2nd speed rpm : 750 Rack travel in m: 14.80...15.00 Aneroid/Altitude Compensator Test 1st version Settina : 600 Speed rpm hPa : 800 Pressure : 14.50...14.70 Rack travel mm Measurement  $1/\min : 600$ Speed 1st pressure hPa : 300 Rack travel in m: 11.80...12.00 2nd pressure hPa : 550 Rack travel in m: 13.50...13.70 3rd pressure hPa : 1050 Rack travel in m: 14.70...14.80 4th pressure hPa : -Rack travel in m: 10.70...11.00 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: 1200 Speed rpm : 1050 Del.quantity cm3/: 192.5...196.5 1000 s: (189.5...199.5) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1200 rpm : 750 Speed Del.quantity cm3/: 220.0...223.0 1000 s: (217.0...226.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm Del.quantity cm3/: 131.0...133.0 1000 s: (128.0...136.0) cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.60 Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 205.0...225.0 1000 s: (201.0...229.0)

:

Remarks:

F05

1st version

Note inst. in remarks column

ect n at adjusting nut (46) Test scheet

: 16.04.92 **Fdition** 

replaces

Calibrating oil : ISO-4113

: VE3/10F1600L483 e c Injection pump

: 0 460 403 016 ld-Type number

Customer Part-No. :

Customer-specific information

: VM Customer

: HR 394 H Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening |

ban: 130.00...133.00 Pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 450

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1200 Speed

Setting value mm: 2.50...2.90

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1200

Setting value bar: 5.30...5.90

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 1200 Speed

Del. quantity cm3/ 1000s.: 45.00...46.00

Shutoff

electromagnet Volt: 12 cm3/: 3.0 Dispersion

1000s.: (3.0)

Low-idle speed regulation

1/min: 400 Speed

Del. quantity cm3/ 1000s.: 10.50...14.50

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.5 1000s.: (3.5)

Full-load speed regulation

1/min: 1720 Speed

Del. quantity cm3/

1000s.: 21.00...27.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100 Del. quantity cm3/: 60.00...100.00

1000s.: 60.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-gty.dif.measurement:

1/min: 1200 Speed

Inj.-qty. cm3/ difference 1000S.: 18.00...26.00

Shutoff

electromagnet Volt: 12

TD-travel dif.measurement

correttore anticipo iniezione (SV) 1. Speed 1/min: 1200

1. Speed

TD-travel

mm: 0.80...1.00 difference

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 1600 2nd speed

mm: 4.10...4.90 TD travel

mm: (3.80...5.20)

Del. quantity cm3/: 37.00...47.00 1000s.: (36.00...48.00) 9th speed 1/min: 1600 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1200 TD travel mm: 2.50...2.90 9th speed Shutoff mm: (2.00...3.40) Shutoff Shutoff electromagnet Volt: 12 Del. quyntity cm3/: 45.50...46.50 1000s.: (43.50...48.50) Shutoff electromagnet Volt: 12 1/min: 600 20th speed Shutoff Supply-pump pressure characteristic: electromagnet Volt: 12 Del. quantity cm3/: 46.00...49.00 1000S.: (44.50...50.50) 2nd speed 1/min: 600 Supply-pump bar: 2.80...3.40 pressure Mech. shutoff: Shutoff electromagnet Volt: 12 Electr. shutoff: 1/min: 1200 3rd speed Supply-pump bar: 5.30...5.90 1/min: 400 1st speed pressure Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet Volt: 12 4th speed 1/min: 1600 Shutoff 4th speed electromagnet volt: -Supply-pump bar: 7.00...7.60 pressure Idle delivery: Shutoff electromagnet Volt: 12 1/min: 400 1st speed Shutoff Overlow quantity at overflow valve: electromagnet Volt: 12 Del. quantity cm3/: 10.50...14.50 1000s.: (8.50...16.50) Dispersion cm3/: 3.5 1000s.: (3.5) 1st speed Shutoff 1/min: 600 electromagnet Volt: 12 : 41.70...83.40 Overflow cm3/10s: (26.70...98.40) 1/min: 1600 1/min: 550 2nd speed quantity Shutoff 2nd speed Shutoff electromagnet Volt: 12 Overflow: 55.60...139.00 3rd speed Shutoff cm3/10s: (40.60...153.00) quantity electromagnet Volt: 12 Del. quantity cm3/: 2.00...8.00 1000s.: (1.00...9.00) Delivery-quant. and breakaway char .: 1/min: 1800 2nd speed Load-dependent start of delivery: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 1000S.: (0.00...3.00) Inj.-qty.dif.measurement: 1/min: 1200 1st speed Inj.-qty. cm3/ : 15.0...17.0 \* difference 1000s.: (15.00...17.00) 1/min: 1720 5th speed Shutoff Shutoff Shutoff electromagnet Volt: 12

Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1200 : 0.80...1.00 # TD-travel difference mm: (0.80...1.00) Shutoff electromagnet Volt: 12 SP press.-dif.measurement: pompa di mandata (FP): 1/min: 1200 1st speed Supply pump-: 0.10...0.30 \* pressure bar: (0.10...0.30) difference Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1/min: 200 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 65.00...95.00 1000s.: (65.00...95.00) 1/min: 500 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 35.00...55.00 1000s.: (35.00...55.00) 1/min: 100 4th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 60.00...100.00 1000s.: (60.00...100.00) Shutoff electromagnet: Cut-in min voltage : 10.0 : 12.0 Rated voltage Mounting and assembly dimensions: Designation mm: 3.2...3.4 mm: 5.8...6.2 K KF mm: 0.6...1.0 MS Remarks:

Note inst. in remarks column

Test scheet : 14.04.92 Edition : 18.02.91 replaces : ISO-4113 Calibrating oil

: VE4/10F1600L352 Injection pump : 0 460 404 061 Type number

Customer Part-No. :

Customer-specific information

Customer : VM

: HR 494 HP Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer: 40.00...48.60 : 42.00...50.00 Electronically

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening |

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery Prestroke mm: -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing device travel

Speed 1/min: 1200

Setting value mm: 1.90...2.30

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1200 Speed

Setting value bar: 4,80...5.40

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 1200 Speed

Del. quantity cm3/ 1000s.: 44.50...45.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.5 1000s.: (3.5)

Low-idle speed regulation

1/min: 400

Del. quantity cm3/

1000s.: 11.50...15.50

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.5 1000s.: (3.5)

Full-load speed regulation

1/min: 1650 Speed

Del. quantity cm3/ 1000s.: 27.00...33.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 45.00...85.00

1000s.: 45.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1200 Speed

cm3/ Inj.-qty.

difference 1000s.: 10.00...18.00

Shutoff

electromagnet Volt: -TD-travel dif.measurement

correttore anticipo iniezione (SV)

1/min: 1200 1.Speed

TD-travel

difference mm: 0.90...1.10

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:	+ Del. quantity cm3/: 27.0033.00 + 1000s.: (24.0036.00)
2nd speed 1/min: 1600 TD travel mm: 3.604.40	+ 8th speed 1/min: 1625 - Shutoff
mm: (3.304.70) Shutoff	electromagnet Volt: 12 bel. quantity cm3/: 33.5041.50 1000s.: -
electromagnet Volt: 12 3rd speed	9th speed 1/min: 1600 Shutoff
mm: (1.402.80) Shutoff	electromagnet Volt: 12  Del. quantity cm3/: 38.0041.00
electromagnet Volt: 12 4th speed   1/min: 1000 TD travel	1000s.: (36.5042.50) 12th speed 1/min: 1200 Shutoff
mm: (0.40,1.80) Shutoff	electromagnet Volt: 12 Del. quyntity cm3/: 44.5045.50
electromagnet Volt: 12  Supply-pump pressure characteristic:	1000s.: (42.0048.00) 20th speed 1/min: 600 Shutoff
2nd speed 1/min: 600	electromagnet Volt: 12 Del. quantity cm3/: 43.5046.50
Supply-pump pressure bar: 2.403.00	10005.: (42.0048.00)
Shutoff electromagnet Volt: 12 3rd speed 1/min: 1200	<pre>Mech. shutoff:     Mech. Abstellung:</pre>
Supply-pump pressure bar: 4.805.40	1 st speed 1/min: 1600 Del. quantity cm3/: 0.003.00 1000s.: (0.003.00)
Shutoff electromagnet Volt: 12 4th speed 1/min: 1600	Shutoff electromagnet volt: 12
Supply-pump pressure bar: 6.407.00 Shutoff	Electr. shutoff:
electromagnet Volt: 12	1st speed 1/min: 400 Del. quantity cm3/: 0.003.00
Overlow quantity at overflow valve:	1000s.: (0.003.00) Shutoff electromagnet volt: -
1st speed 1/min: 600 Shutoff electromagnet Volt: 12	Idle delivery:
Overflow : 41.7083.40 quantity cm3/10s: (26.7098.40)	1st speed 1/min: 400 Shutoff
2nd speed 1/min: 1600 Shutoff electromagnet Volt: 12	electromagnet Volt: 12  Del. quantity cm3/: 11.5015.50  1000s.: (9.5017.50)
Overflow : 55.60139.00 quantity cm3/10s: (40.60154.00)	Dispersion cm3/: 3.5 1000s.: (3.5)
Delivery-quant. and breakaway char.:	+ 2nd speed 1/min: 480 + Shutoff
3rd speed 1/min: 1700 Shutoff	+ electromagnet Volt: 12 + Del. quantity cm3/: 2.008.00 + 1000S.: (1.009.00)
electromagnet Volt: 12 Del. quantity cm3/: 0.003.00	+ 3rd speed 1/min: 550 - Shutoff
1000s.: (0.003.00) 5th speed	electromagnet Volt: 12  Del. quantity cm3/: 0.003.00  1000s.: (0.003.00)

Load-dependent start of delivery: Inj.-qty.dif.measurement: 1/min: 1200 3rd speed cm3/: 10.00...18.00 Inj.-qty. difference 1000s.: -TD-travel dif.measurement: correttore anticipo iniezione (SV):
1st speed 1/min: 1200
TD-travel: 0.90...1.10 TD-travel difference mm: -Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1/min: 250 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 50.00...80.00 1000s.: (50.00...80.00) 1/min: 450 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40.00...60.00 1000s.: (40.00...60.00) 1/min: 100 4th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 45.00...85.00 1000s.: (45.00...85.00) Shutoff electromagnet: Cut-in min voltage : 10.0 : 12.0 Rated voltage Mounting and assembly dimensions: Designation mm: 3,2...3,4 mm: 5,7...5,9 K KF mm: 0,6...1,0MS mm: 1,3 SVS max. mm: 17,0...19,0 XK mm: 14,2...17,6 XL Remarks:

Note inst. in remarks column

: VMA 2,2 F1 : 14.04.92 Test scheet Edition : 18.02.91 replaces Calibrating oil : ISO-4113

: VE4/10F2100L269-1 Injection pump : 0 460 404 065 Type number

Customer Part-No. :

Customer-specific information

Customer

: HR 492.4 HJ Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating oil return temp.

with thermometer : 40.00...48.00 : 42.00...50.00 Electronically

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening |

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery Prestroke mm: -(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1000 Speed Charge press. hPa: 1000

mm: 1.50...1.90 Setting value

Shutoff

electromagnet Volt: 12

Supply—pump pressure

1/min: 1000 Speed Charge press hPa: 1000

Setting value bar: 4.40...5.00

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1500 Speed Charge press. hPa: 1000

Del. quantity cm3/

1000s.: 66.00...67.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.0 1000s.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700

Del. quantity cm3/ 1000s.: 45.00...46.00

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 450 Speed

Del. quantity cm3/ 1000S.: 13.00...17.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (3.0)

Full-load speed regulation

1/min: 2300 Speed hPa: 1000 Charge press

Del. quantity cm3/ 1000s.: 27.00...33.00

Start:

1/min: 100

Del. quantity cm3/: 47.00...67.00

1000s.: 47.00 mind

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1500 Speed

cm3/ Inj.-qty.

difference 1000s.: 8.00...14.00

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo in 1.Speed 1/min: 1	niezione (SV) + 500 +	2nd speed 1/min: Charge press. hPa: Shutoff	2100 1000
	.901.10	electromagnet Volt: Overflow:	12
Shutoff electromagnet Volt: 1	2 ‡	quantity cm3/10s:	(40.60154.00)
Inspection pump test Test specifications i	specifications + n parentheses +	Delivery-quant. and	breakaway char.
Timing-device charact	eristic:	1nd speed 1/min: Charge-air pressure	
2nd speed 1/min: 2	100 I	point hPa:	450
Charge press hPa: 1		Shutoff	130
	.107.90	electromagnet Volt:	12
mm. (	6.808.20)	Del. quantity cm3/:	58.5059.50
Shutoff	1	1000s.:	(56.5061.50)
electromagnet Volt: 1	2	3rd speed 1/min:	
3rd speed 1/min: 1	non 1	Charge press. hPa:	
Charge press hPa: 1	000	Shutoff	1000
TD travel mm: 1	50 1 90	electromagnet Volt:	12
mm: (	(1.002.40)	Del. quantity cm3/:	ດ້າດ8.ກດ
Shutoff	I	10003	(0.008.00)
electromagnet Volt: 1	$\mathbf{I}$	5th speed 1/min:	2300
5th speed 1/min: 1	Sm I	Charge press. hPa:	1000
Change proces best 1	$\Gamma$	Shutoff	1000
Charge press. hPa: 1 TD travel mm: 4	1000 1000 1	electromagnet Volt:	12
TO Cravet IIII. 4	3.805.20)	Del. quantity cm3/:	27 00 33 00
Shutoff	I	10005	(26.0034.00)
electromagnet Volt: 1	12	9th speed 1/min:	
etectrollagiet vott.		Charge press. hPa:	1000
Supply-pump pressure	characteristic:	Shutoff	1000
Supply pulip pressure	that acces is cite.	electromagnet Volt:	12
1st speed 1/min: 2	2100	Del. quantity cm3/:	56.5059.50
Charge press. hPa: 1		1000s.:	(55.0061.00)
Supply-pump	1000	12th speed 1/min:	
pressure bar: 7	7.508.10	Charge press. hPa:	1000
Shutoff	.50	Shutoff	, 5 5 5
electromagnet Voit: 1	12	electromagnet Volt:	12
2nd speed 1/min: 1	ion 1	Del. quyntity cm3/:	66.0067.00
Charge press. hPa: 1	inno	1000s.:	(64.5068.50)
Supply-pump	1	18th speed 1/min:	
pressure bar:	4.405.00	Shutoff	
Shutoff	+	electromagnet Volt:	12
electromagnet Volt:	12 +	Del. quantity cm3/:	45.0046.00
3rd speed 1/min: 7	700 +	1000s.:	(43.0048.00)
Charge press. hPa:		20th speed 1/min:	
Supply-pump	+	Charge press. hPa:	1000
pressure bar:	3.604 <i>.</i> 20	Shutoff	
Shutoff	+	electromagnet Volt:	12
electromagnet Volt:	12	Del. quantity cm3/:	67.7070.70 (66.2072.20)
Overlow quantity at o	overflow valve:	Mech. shutoff:	
1st speed 1/min:			
Charge press. hPa: '	1000 +	Electr. shutoff:	
Shutoff	†	A	150
electromagnet Volt: '	72 +	1st speed 1/min:	
	41.7083.40	Del. quantity cm3/:	(0.005.00
quantity cm3/10c.	(26.70 98.40) +	7100S.3	(0.003.00)

## Idle delivery:

1/min: 450 1st speed

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 13.00...17.00 1000s.: (10.00...20.00) Dispersion cm3/: 3.0 1000s.: (3.0) 2nd speed 1/min: 475

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 7.00...13.00 1000s.: (5.00...15.00)

1/min: 550 4th speed

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 0.50...5.50 1000s.: (0.50...5.50)

Load-dependent start of delivery:

Inj.-dty.dif.measurement:

1st speed 1/min: 1500 Inj.-qty. cm3/ : 3.00...5.00 difference 1000S.: -

Shutoff

electromagnet Volt: 12

1/min: 1500 3rd speed

cm3/: 8.00...14.00 Inj.-qty.

difference 1000s.: -

Shutoff

electromagnet Volt: 12

TD-travel dif.measurement:

correttore anticipo iniezione (SV):

1/min: 1500 1st speed

TD-travel : 0.90...1.10

difference ma: -

Shutoff

electromagnet Volt: 12

SP press.-dif.measurement:

pompa di mandata (FP):

1/min: 1500 1st speed

Supply pump-

: 0.10...0.30 pressure

difference bar: -

Shutoff

electromagnet Volt: 12

Automatic starting fuel delivery:

1/min: 400 1st speed

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 52.00...72.00 1000s.: (52.00...72.00)

electromagnet Volt: 12 Del. quantity cm3/: 40.00...60.00

1/min: 550

1000s.: (40.00...60.00)

1/min: 100 4th speed

Shutoff

2nd speed

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 47.00...67.00 1000s.: (47.00...67.00)

## Shutoff electromagnet:

Cut-in

min voltage : 10,0 : 12,0 🗪 Rated voltage

Mounting and assembly dimensions:

Designation

mm: 3,2...3,4 mm: 5,6...6,0 K KF mm: 0,6...1,0 mm: 20,0...22,0 MS XK XL mm: 10,0...13,4

Remarks:

Operate control lever after each manifold-pressure compensator pressure

change.

Note inst. in remarks column

: SOF Test scheet : 14.04.92 Edition : 18.02.91 replaces Calibrating oil : ISO-4113

: VE4/10F2050R364 Injection pump : 0 460 404 066 Type number

Customer Part-No. :

Customer-specific information Customer : SOFIM

: 8140,67,2580 Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer: 40.00...48.00 : 42.00...50.00 Electronically

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening |

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery

mm: 0,2 Prestroke

(from BDC): +0.02(0.04)

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1000 Speed

Setting value mm: 3.10...3.50

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1000 Speed

Setting value bar: 4.50...5.10

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 2000 Speed

Del. quantity cm3/

1000s.: 35.00...36.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.0 1000s.: (3.0)

Low-idle speed regulation

1/min: 375

Del. quantity cm3/ 1000s.: 14.00...18.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (3.0)

Full-load speed regulation

1/min: 2200 Speed

Del. quantity cm3/ 1000s.: 13.00...19.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 70.00...100.00 mind 1000s.: 70.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1000 Speed

cm3/Inj.-qty.

difference 1000s.: 20.00...26.00 \*

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV)

1/min: 1000 1.Speed

TD-travel

difference mm: 0.40...0.60 \*

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:	† Del. quantity cm3/: 0.003.00
2nd speed 1/min: 1800	1000S.: (0.003.00) + 5th speed 1/min: 2200
TD travel mm: 7.308.10 mm: (7.008.40)	+ Shutoff + electromagnet Volt: 12
Shutoff	Del. quantity cm3/: 13.0019.00
electromagnet Volt: 12	1000s.: (12.0020.00)
3rd speed 1/min: 1000	8th speed 1/min: 2150
	- Shutoff
	electromagnet Volt: 12
mm: (2.604.00)	T electrollagric voic. 12
Shutoff	Del. quantity cm3/: 23,5030,50
electromagnet Volt: 12	
4th speed 1/min: 600	
TD travel mm: 0.801.60	+ Shutoff
mm: (0.501.90)	+ electromagnet Volt: 12
Shutoff	Del. quyntity cm3/: 35.0036.00
electromagnet Volt: 12	10008.: (33,5037,50)
5th speed 1/min: 2000	15th speed 1/min: 1000
TD travel mm: 8.209.00	+ Shutoff
mm: (7.909.30)	- electromagnet Volt: 12
Shutoff	Pel. quantity cm3/: 38.5041.50
electromagnet Volt: 12	1000s.: (37.5042.50)
•	† 17th speed 1/min: 600
Supply-pump pressure characteristic:	+ Shutoff
and the second	+ electromagnet volt: 12
1st speed 1/min: 2000	Del. quantity cm3/: 31.5034.50
Supply-pump	1000H.: (30.5035.50)
pressure bar: 7.007.60	20th speed 1/min: 500
Shutoff	+ Shutoff
electromagnet Volt: 12	+ electromagnet Volt: 12
2nd speed 1/min: 1000	- Del. quantity cm3/: 31.5034.50
Supply-pump	10008.: (29.5036.50)
pressure bar: 4.505.10	
Shutoff	+ Mech. shutoff:
electromagnet Volt: 12	T ricent. states 1.
3rd speed 1/min: 500	Flectr. shutoff:
	I Eccert. Students
Supply-pump pressure bar: 3.504.10	1st speed 1/min: 375
	Del. quantity cm3/: 0.003.00
Shutoff	10005.: (0.003.00)
electromagnet Volt: 12	+ Shutoff
A continue minutifier of avantian values	electromagnet volt: -
Overlow quantity at overflow valve:	T etectionagnet vote.
1st speed 1/min: 500	Idle delivery:
	I die delivery.
Shutoff	1st speed 1/min: 375
electromagnet Volt: 12 Overflow : 41.7083.40	+ Shutoff
Overflow : 41.7083.40	F electromagnet Volt: 12
quantity cm3/10s: (26.7098.40)	Del. quantity cm3/: 14.0018.00
2nd speed 1/min: 2000	1000s.: (11.0021.00)
Shutoff 12	
electromagnet Volt: 12	+ Dispersion cm3/: 3.0 + 1000S.: (3.0)
Overflow : 55.60139.00	
quantity cm3/10s: (40.60154.00)	+ 2nd speed 1/min: 400
A through the second	+ Shutoff
Delivery-quant. and breakaway char.:	+ electromagnet Volt: 12
	Del. quantity cm3/: 7.0013.00
7 1 1 41 2 2770	1000s.: (5.0015.00)
3rd speed 1/min: 2330	+ 4th speed 1/min: 465
Shutoff	+ Shutoff
electromagnet Volt: 12	+ electromagnet Volt: 12

Del. quantity cm3/: 0.00...2.00 mm: mm: 5,6...6,0 mm: 1,6...2,0 mm: 1,9 KF 1000s.: (0.00...2.00) MS SVS max. Load-dependent start of delivery: Inj.-gty.dif.measurement: Remarks: 1/min: 1000 1st speed Inj.-gty. cm3/ : 19.0...21.0 # Shutoff electromagnet Volt: 12 2nd speed 1/min: 1000 cm3/: + 4.0...6.0Inj.-qty. difference 1000s.: -TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1000 : 0.80...1.80 ' TD-travel difference Shutoff electromagnet Volt: 12 SP press.-dif.measurement: pompa di mandata (FP): 1st speed 1/min: 1000 Supply pump-: 0.10...0.30 # pressure difference bar: -Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1/min: 400 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 48.00...68.00 1000s.: (48.00...68.00) 1/min: 500 2nd speed Shucoff electromagnet Volt: 12 Del. quantity cm3/: 28.00...38.00 1000s.: (28.00...38.00) 1/min: 100 4th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 70.00...100.00 1000s.: (70.00...100.00) Shutoff electromagnet: Cut-in min voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation

F17

Note inst. in remarks column

Test scheet

: 10.03.92 Edition

replaces

Calibrating oil : ISO 4113

: VE4/10F2100L414-1 Injection pump

: 0 460 404 073 Type number

Customer-specific information

Customer

: HR 425 CLIRS Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening

bar: 130.00...133.00 Pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450

x Length

Start of delivery mm: -Prestroke

(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1000 Charge press. hPa: 1000

Setting value mm: 1,2...1,6

Shutoff

electromagnet Volt: 12,0

Supply-pump pressure

1/min: 1000 Speed

F18

Charge press hPa: 1000

Setting value bar: 4,7...5,3

electromagnet Volt: 12,0

Full-load del. with charge press.:

1/min: 1500 Speed Charge press. hPa: 1000

Del. quantity cm3/ 1000s.: 65,5...66,5

Shutoff

electromagnet Volt: 12,0 Dispersion cm3/: 3,0

1000s .: -

Full-load del. w/out charge press.:

1/min: 700 Speed

Del. quantity cm3/

1000s.: 43,0...44,0

Shutoff

electromagnet Volt: 12,0

Low-idle speed regulation

1/min: 450 Speed

Charge press hPa: -Del. quantity cm3/

1000s.: 13,0..17,0

Shutoff

electromagnet Volt: 12,0 Del. quantity cm3/: 3,0 1000s.: -

Full-load speed regulation

1/min: 2300 Speed Charge press hPa: 1000 Del. quantity cm3/ 1000S.: 40,0...46,0

Shutoff

electromagnet Volt: 12,0

Start:

1/min: 100 Speed

Charge press hPa: -

Del. quantity cm3/: -mind 1000s.: 35,0

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1500 Speed Charge press hPa: -

cm3/Inj.-qty.

difference 1000s.: 7,0...9,0

Shutoff

electromagnet Volt: 12,0

SP pressdif.measurement +	Overflow : 41,683,3
pompa di mandata (FP)	quantity cm3/10s: (26,698,3)
1. Speed 1/min: 1500	2nd speed 1/min: 2100
Charge press hPa: - +	Charge press. hPa: 1000
	Shutoff
Supply pump	
pressure	electromagnet Volt: 12,0
difference bar: 0,10,3	Overflow : 55,5138,8
Shutoff +	quantity cm3/10s: (40,5153,3)
electromagnet Volt: 12	
+	Delivery quant. and breakaway char.:
Inspection-pump test specifications +	• •
Test specifications in parentheses	
1est specifications in parenticoes	1nd speed 1/min: 700
Timing daying characteristics	Charge-air pressure-setting
Timing-device characteristic:	point hPa: 350
1 1000	
1st speed 1/min: 1000 +	LDA-stroke mm: 7,0
Charge press hPa: 1000	Shutoff
TD travel mm: 1,21,6 +	electromagnet Volt: 12,0
mn: (0,72,1)	Del. quantity cm3/: 55,556,5
electromagnet Volt: 12,0	10003:: (53,558,5)
2nd speed 1/min: 1500	2nd speed 1/min: 2500
Charge mass 1000	Charge press. hPa: 1000
Charge press hPa: 1000	church
TD travel mm: 4,04,8	Shutoff
mm: (3,75,1) +	electromagnet Volt: 12,0
Shutoff +	Del. quantity cm3/: 0,0 8,0
electromagnet Volt: 12,0	1000s.: -
3rd speed 1/min: 2100	3rd speed 1/min: 2300
Charge press hPa: 1000 +	Charge press. hPa: 1000
TD travel mm: 7,07,8	Shutoff
mm: (6,78,1)	electromagnet Volt: 12,0
	Dei. quantity cm3/: 41,045,0
Shutoff	1000c . (70.0
electromagnet Volt: 12,0 +	10008.: (39,047,0)
†	4th speed 1/min: 2100
Supply-pump pressure characteristic:	Charge press. hPa: 1000
+	Shutoff
1st speed 1/min: 700 +	electromagnet Volt: 12,0
Charge press. hPa: 1000	Del. quantity cm3/: 63,066,0
Supply-pump +	1000s.: (61,567,5)
	5th speed 1/min: 1500
	Charge press. hPa: 1000
Shutoff + 13.0	Shutoff
electromagnet Volt: 12,0 +	
2nd speed 1/min: 1000 +	electromagnet Volt: 12,0
Charge press. hPa: 1000	Del. quantity cm3/: 65,566,5
Supply-pump +	1000s.: (64,068,0)
pressure bar: 4,75,3	6th speed 1/min: 700
Shutoff	Charge press. hPa: 1000
electromagner Volt: 12,0	Shutoff
3rd speed 1/min: 2100 +	electromagnet Volt: 12,0
Charge press. hPa: 1000	Del. quantity cm3/: 65,568,5
	1000s.: (64,070,0)
Supply-pump	
pressure bar: 7,68,2	
Shutoff	Charge press. hPa: -
electromagnet Volt: 12,0	Shutoff 12.0
†	electromagnet Volt: 12,0
Overlow quantity at overflow valve:	Del. quantity cm3/: 43,044,0
4	1000s.: (41,046,0)
1st speed 1/min: 700 }	•
Charge press. hPa: 1000	Mech. shutoff:
	inputt colorects
Shutoff	Electr. shutoff:
electromagnet Volt: 12,0 +	CECULI . SHULUIII.

1st speed 1/min: 450 Charge press. hPa: -Del. quantity cm3/: 0,0...3,0 1000s.: -Idle delivery: 1/min: 450 1st speed Shutoif electromagnet Volt: #12,0 Del. quantity cm3/: 13,0...17,0 1000s.: (10,0...20,0) 1/min: 500 2nd speed Shuroff electromagnet Volt: 12,0 Del. quantity cm3/: 2,5...7,5 1000s.: (2,0...8,0) 1/min: 600 3rd speed Shutoff electromagnet Volt: 12,0 Del. quantity cm3/: 0,0...5,0 1000s.: -Load-dependent start of delivery: Inj.-qty.dif.measurement: 1/min: 1500 1st speed Charge press. hPa: -Inj.-qty. cm3/ : 13,0...19,0 \* difference 1000s.: -Shutoff electromagnet Volt: 12,0 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1500 Charge press. hPa: -: 1,4...1,6 TD-travel Shutoff electromagnet Volt: 12,0 Part-load del.at 3rd inj.-qty. terza fermo della portata stop (EGR set) scarico) (ARF) gaz d'échappement-ARF) mm: 12,0 Spacing 1/min: 1000 1st speed Charge press. hPa: 1000 Shutoff electromagnet Volt: 12,0 Del. quantity cm3/: 42,5...44,5 1000s.: (41,0...46,0) Automatic starting fuel delivery: 1st speed 1/min: 400

Shutoff electromagnet Volt: 12,0 Del. quantity cm3/: 45,0...65,0 1000s.: -2nd speed 1/min: 550 Charge press. hPa: -Shutoff electromagnet Volt: 12,0 Del. quantity cm3/: 25,0...45,0 1000s.: -Shutoff electromagnet: Cut-in min voltage : 10,0 : 12,0 Rated voltage Mounting and assembly dimensions: Designation mm: 3,2...3,4 mm: 5,2...5,6 KF MS mm: 0,6...1,0SVS max. mm: 4,3 mm: 7.0 LDA stroke Ajustement Potentiometer: Angle for °: 45 cot. Supply voltage volt: 5,0 pot. Output volt volt: 2,95 pot. Remarks: Overflow restriction 0.55 mm - Part No. ...303

Charge press. hPa: -

Note inst. in remarks column

Test scheet : PER : 09.04.92 Edition : 13.09.91 replaces : ISO-4113 Calibrating oil

: VE4/11F2250R413 Injection pump : 0 460 414 082 Type number

Customer Part-No. :

Customer-specific information : PERKINS Customer

: T 4.20 (V) Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating oil return temp.

with thermometer : 40.00...48.00 : 42.00...50.00 Electronically

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening |

bar: 130.00...133.00 Pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mn: 450 x Length

Start of delivery Prestroke mm: -(from BDC): -

Start of delivery block Piston stroke mm: 1,2 mm: +0,02(0,06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1500 Speed Charge press. hPa: 800

Setting value mm: 4.00...4.40

AFB/AFB

Volt: 12 valve

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1500 Speed Charge press hPa: 800

Setting value bar: 7.30...7.90

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1250 Speed Charge press. hPa: 800

Del. quantity cm3/ 1000s.: 66.50...67.50

KSB/AFB

Volt: 12 valve

Shutoff

electromagnet Volt: 12 cm3/: 4.0 Dispersion 1000s.: (5.0)

Full-load del. w/out charge press.:

1/min: 625 Speed

Del. quantity cm3/ 1000s.: 29.50...30.50

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KSB/AFB

Volt: 12 valve

Shucoff

electromagnet Volt: 12 cm3/: 4.0 Dispersion 1000s.: (4.0)

Low-idle speed regulation

1/min: 400 Speed

Del. quantity cm3/

1000s.: 9.00...11.00

KSB/AFB

Volt: 12 valve

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (4.0)

Full-load speed regulation

1/min: 2525 Charge press hPa: 800

Del. quantity cm3/ 1000s.: 23.50...25.50

KS8/AFB Supply-pump pressure characteristic: Volt: 12 valve Shutoff 1st speed 1/min: 1000 electromagnet Volt: 12 Charge press. hPa: 800 Supply-pump Start: bar: 6.00...6.60 pressure KSB/AFB 1/min: 100 Speed Del. quantity cm3/: 70.00...100.00 mind 1000s.: 70.00 Volt: 12 valve Shutoff electromagnet Volt: 12 KSB/AFB 1/min: 1500 2nd speed Valve Volt: 12 Charge press. hPa: 800 Shutoff Supply-pump electromagnet Volt: 12 bar: 7.30...7.90 pressure Inspection pump test specifications KSB/AFB Volt: 12 Test specifications in parentheses valve Shutoff electromagnet Volt: 12 Timing device characteristic: 1/min: 2000 3rd speed Charge press. hPa: 800 1/min: 2000 2nd speed hPa: 800 Supply-pump Charge press bar: 8.30...8.90 mn: 6.10...6.90 pressure TD travel KSB/AFB mm: (5.80...7.20) valve Volt: 12 KSB/AFB Shutoff Volt: 12 valve Shutoff electromagnet Volt: 12 electromagnet Volt: 12 3rd speed 1/min: 1500 Overlow quantity at overflow valve: hPa: 800 Charge press 1/min: 500 1st speed mn: 4.00...4.40 TD travel Charge press. hPa: - KSB/AFB mm: (3,60...4.80) KSB/AFB Volt: 12 valve Volt: 12 valve Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 1/min: 1000 : 62.55...104.25 Overflow 4th speed cm3/10s: (47.55...119.25) 1/min: 2250 quantity Charge press hPa: 800 2nd speed TD travel mm: 1.90...2.70 Charge press. hPa: 800 mm: (1.60...3.00) KSB/AFB KSB/AFB Volt: 12 Volt: 12 valve valve Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 : 69.50...152.90 1/min: 800 Overflow 8th speed Charge press. hPa: 800 cm3/10s: (54.50...167.90) quantity mm: 1,50...3.50 mm: (1.30...3.70) TD travel Delivery-quant. and breakaway char.: KSB/AFB Volt: valve 1/min: 1000 1nd speed Shutoff Charge-air pressure-setting electromagnet Volt: 12 1/min: 500 point hPa: 300 9th speed Charge press. hPa: 800
TD travel mm: 2.10...2.30
mm: (1.40...3.00) mm: 6,5 LDA-stroke KSB/AFB Volt: 12 valve Shutoff KSB/AFB electromagnet Volt: 12 Del. quantity cm3/: 58.50...59.50 1000s.: (55.50...62.50) Volt: valve Shutoff electromagnet Volt: 12

3rd speed 1/min: 2625	+
Charge press. hPa: 800 KSB/AFB	1st speed 1/min: 400 bel. quantity cm3/: 0.003.00
valve Volt: 12	† 1000S.: (0.003.00)
Shutoff electromagnet Volt: 12	+ Shutoff + electromagnet volt: -
Del. quantity cm3/: 0.0010.00	+ KSB/AFB
1000s.: (0.0010.00) 5th speed 1/min: 2525	t valve Volt: 12
Charge press. hPa: 800 KSB/AFB	Idle delivery:
valve Volt: 12 Shutoff	1st speed 1/min: 400 KSB/AFB
electromagnet Volt: 12	+ valve Volt: 12
Del. quantity cm3/: 23.5025.50 1000s.: (20.5028.50)	+ Shutoff + electromagnet Volt: 12
9th speed 1/min: 2250	+ Del. quantity cm3/: 9.0011.00
Charge press. hPa: 800 KSB/AFB	1000S.: (6.0014.00) Dispersion cm3/: 3.0
valve Volt: 12	10005.: (4.0)
Shutoff	+ 2nd speed 1/min: 500 + KSB/AFB
electromagnet Volt: 12 Del. quantity cm3/: 70.0074.00	+ valve Volt: 12
1000\$.: (69.0075.00)	+ Shutoff + electromagnet Volt: 12
12th speed  1/min: 1250 Charge press. hPa: 800	+ Del. quantity cm3/: 0.005.00
KSB/AFE	1000s.: (0.005.00)
valve Volt: 12 Shutoff	Automatic starting fuel delivery:
electromagnet Volt: 12 Del. quyntity cm3/: 66.5067.50	1
1000\$.: (64.5069.50)	2nd speed 1/min: 350
15th speed 1/min: 1000 Charge press. hPa: 800	+ KSB/AFB + valve Volt: 12
KSB/AFB	+ Shutoff
valve Volt: 12 Shutoff	+ electromagnet Volt: 12 + Del. quantity cm3/: 20.0040.00
electromagnet Volt: 12	1000s.: (20.0040.00)
Del. quantity cm3/: 69.5072.50 1000s.: (67.5074.50)	+ 4th speed 1/min: 100
18th speed 1/min: 625	+ KSB/AFB
Charge press. hPa: - KSE/AFB	+ valve Volt: 12 + Shutoff
valve Volt: 12	+ electromagnet Volt: 12
Shutoff electromagnet Volt: 12	Del. quantity cm3/: 70.00100.00 1000s.: (70.00100.00)
Del. quantity cm3/: 29.5030.50	+
1000S.: (27.0033.00) 20th speed 1/min: 500	Shutoff electromagnet:
Charge press. hPa: -	- Cut-in
KSB/AFB valve Volt: 12	min voltage : 10.0 Rated voltage : 12.0
Shutoff	+
electromagnet Volt: 12 Del. quantity cm3/: 27.5032.50	Mounting and assembly dimensions:
10005.: (26.0034.00)	Designation 7.3.7.7
Mech. shutoff:	+ K mm: 3.23.3 + KF mm: K-OT
	+ MS mm: 0.61.0
Electr. shutoff;	+ SVS max. mm: -

LDA stroke XK XL mm: 6.5 mm: 20.0...22.0 mm: 10.7...14.1

Remarks:

Overflow restriction 0.75 mm - Part No. ..343,..344

Note inst. in remarks column

Test scheet

: 09.04.92 Edition

replaces

Calibrating oil : ISO-4113

: VE4/11F2100R415-1 Injection pump : 0 460 414 085 Type number

Customer Part-No. :

Customer-specific information

Customer

Engine

: 2.5L DI MY 92

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil return temp.

with thermometer : 40.00...48.00 : 42.00...50.00 Electronically

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

essembly

: 1 683 901 114

Openina

bar: 207.00...210.00 Pressure

Perforated-plate

diameter

mp: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450 x Length

Start of delivery Prestroke mm: -(from BDC): -

Start of delivery block Piston stroke mm: 0.35

mm: 0.30...0.40

Outlet.

Injection-pump setting values Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250

Setting value mm: 4.20...4.60

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1250 Speed

Setting value bar: 6.20...6.80

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 500

Del. quantity cm3/

1000s.: 25.80...26.20 F

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425

Del. quantity cm3/

1000s.: 8.00...9.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (4.0)

Full-load speed regulation

Speed 1/min: 2200

Del. quantity cm3/

1000s.: 23.20...25.20

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100 Del. quantity cm3/: 50.00...90.00

mind 100Cs.: 50.00

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 2000 1st speed

mm: 7.50...8.30 TD travel

mm: (7.20...8.60)

electromagnet Volt: 12

1/min: 1250 2nd speed

mm: 4.20...4.60 TD travel

mm: (3.90...4.90)

Shutoff	+ Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
3rd speed 1/min: 800	Del. quantity cm3/: 23.2025.20
TD travel mm: 2.002.80 -	1000s.: (19.2029.20)
mm: (1.703.10)	4th speed 1/min: 2100
Shutoff	Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
etects diagnet vott. 12	Del. quantity cm3/: 30.5036.50
N	10005.: (27.5039.50)
Supply-pump pressure characteristic:	
•	
1st speed 1/min: 500	+ Shutoff
Supply-pump -	- electromagnet Volt: 12
pressure bar: 4.405.00	Del. quantity cm3/: 36.5038.90
Shutoff	1000s.: (35.2040.30)
electromagnet Volt: 12	4 6th speed 1/min: 1000
2nd speed 1/min: 1000	↓ Shutoff
Supply-pump	+ electromagnet Volt: 12
pressure bar: 5.706.30	+ Del. quantity cm3/: 32.233.2 E
Shutoff	1000s.: (30.235.2)
	7th speed 1/min: 500
electromagnet Volt: 12 3rd speed = 1/min: 1250	Shutoff
	electromagnet Volt: 12
Supply-pump	1 0-1 guartity 27/12/100 28 0 5
pressure bar: 6.206.80	Del. quantity cm3/: 24.0028.0 F
Shutoff	10008.: (23.2027.0)
electromagnet Volt: 12	†
4th speed 1/min: 2000	+ Mech. shutoff:
Supply-pump	+
pressure bar: 7.808.40	具 Electr. shutoff:
Shutoff	+
electromagnet Volt: 12	1 1st speed 1/min: 425
Ctosel olingrice soter 12	+ Del. quantity cm3/: 0.003.00
Contact mondifies at according values	1000s.: (0.003.00)
Overlow quantity at overflow valve:	Shutoff
And award Admin 500	+ electromagnet volt: -
1st speed 1/min: 500	+ etectrollagret vott.
Shutoff	Tally delicemen
electromagnet Volt: 12	† Idle delivery:
Overflow : 97.00141.00	† • • • • • • • • • • • • • • • • • • •
quantity cm3/10s: (82.00156.00)	+ 1st speed 1/min: 425
2nd speed 1/min: 1950	+ Shutoff
Shutoff	+ electromagnet Volt: 12
electromagnet Volt: 12	+ Del. quantity cm3/: 8.009.00
Overflow : 115.00184.00	1000s.: (5.0013.00)
quantity cm3/10s: (100.00199.00)	+ Dispersion cm3/: 3.0
demining a minerial and	1000s.; (4.0)
Delivery-quant. and breakaway char.:	2nd speed 1/min: 500
periacia diante dia piededada ciidi e	+ Shutoff
	electromagnet Volt: 12
And an and Atrian 4000	Del. quantity cm3/: 2.0010.00
1nd speed 1/min: 1950	1900s.: (0.0012.00)
HBA-stroke mm: 7.7	10005.: (0.0012.00)
Shutoff	†
electromagnet Volt: 12	Part-load del.at 3rd injqty.
Del. quantity cm3/: 36.038.4 D	terza fermo della portata
1000\$.: (34.739.7)	+ stop (EGR set)
2nd speed 1/min: 2400	+ scarico) (ARF)
Shutoff	+ gaz d'échappement-ARF)
electromagnet Volt: 12	- Spacing mm: 20.0
Del. quantity cm3/: 0.005.00	1
10008.: (0.005.00)	1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
	4 1st speed 1/min: 1/0U
3rd speed 1/min: 2200	+ 1st speed 1/min: 1250 + Shutoff

Del. quantity cm3/: 18.00...19.00 1636s.: (16.00...21.00) Automatic starting fuel delivery: 1/min: 300 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40.00...70.00 1000s.: -1/min: 480 2nd speed Shutoff electromagnet Volt: 12
Del. quantity cm3/: 21.00...31.00
1000S.: -1/min: 100 3rd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 45.00...85.00 1000s.: -Shutoff electromagnet: Cut-in min voltage : 10.0 : 12.0 Rated voltage Mounting and assembly dimensions: Designation mm: 2.7...2.9 K ma: KOT KF mrn: 1.8 MS HBA stroke mm: 7.7 XK mm: mm: -XL Remarks: Overflow restriction 0.75 mm - Part No. ..343,..344 Pump/engine assignment: Attach timing-device cover KDEP 1151. Plunger lift in blocking position = 0.30... 0.40 mm referenced to outlet "A".

Note inst. in remarks column

: FOR Test scheet : 10.04.92 Edition

replaces

Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R415-2 : 0 460 414 089 Type number

Customer Part-No. :

Customer-specific information

Customer

: 2.51 DI MY 92 Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil return temp.

with thermometer : 40.00...48.00 : 42.00...50.00 Electronically

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 638 901 114 assembly

Openina

bar: 207.00...210.00 Pressure

Perforated-plate

mm: 0.4 diameter

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Walt thickness : 2.00 mm: 450 x Length

Start of delivery Prestroke mm: -(from BDC): -

Start of delivery block mm: 0.35Piston stroke

mm: 0.30...0.40

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1250

Setting value mm: 3.80...4.20

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1250 Speed

Setting value bar: 6.90...7.50

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 500

Del. quantity cm3/ 1000s.: 25,8...26.2 F

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 425

Del. quantity cm3/ 1000s.: 6.00...8.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (4.0)

Fuil-load speed regulation

1/min: 2200 Speed

Del. quantity cm3/ 1000s.: 23.50...25.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.0 1000s.: (4.8)

Start:

1/min: 100 Speed

Del. quantity cm3/: 40.00...80.00

1000s.: 40.00

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000

mm: 7.00...7.80 TD travel

mm: (6.70...8.10)

Shutoff

electromagnet Volt: 12 3rd speed 1/min: 1250

	3.804.20	+	5th speed 1/min: 2200	
तिकाः	(3.504.50)	+	Shutoff	
Shutoff		+	electromagnet Volt: 12	
electromagnet Volt:	12	+	Del. quantity cm3/: 23.5025.50	}
4th speed 1/min:	800	+	1000s.: (19.5029.5	50)
TD travel mm:	1.302.10	+	8th speed 1/min: 2100	
	(1.002.40)	+	Shutoff	
Shutoff		1	electromagnet Volt: 12	
electromagnet Volt:	12	1	Del. quantity cm3/: 31.0037.00	)
o to to to mag. lot voto	•	1	Del. quantity cm3/: 31.0037.00 1000s.: (28.0040.0	)(0)
Supply-pump pressur	e characteristic:	1	10th speed 1/min: 1700	
coppe, pant pressur	0.10.00.100.100	1	Shutoff	
1st speed 1/min:	500	1	electromagnet Volt: 12	
Supply-pump		1	Del. quantity cm3/: 37.0039.40	)
pressure bar:	5.205.80	1	1000s.: (35.7040.7	70)
Shutoff	31601113140	+	12th speed 1/min: 500	
electromagnet Volt:	12	+	Shutoff	
2nd speed 1/min:	า้กักก	1	electromagnet Volt: 12	
Supply-pump	1000	1	Del. quyntity cm3/: 25.8026.20	)
pressure bar:	6.407.00	1	1000s.: (23.0029.(	(00
Shutoff	0.40	1	18th speed 1/min: 1000	
electromagnet Volt:	12	1	Shutoff	
3rd speed 1/min:	1250	1	electromagnet Volt: 12	
Supply-pump	120	1	Del. quantity cm3/: 32.033.0	E
pressure bar:	6.907.50	1	1000S.: (30.035.0)	) <u> </u>
Shutoff	0.70	$\perp$	1000011 (30101110)10	•
electromagnet Volt:	12	I	Mech. shutoff:	
4th speed 1/min:	2000	I	neem. Shatorr	
	2000	Ι	Electr. shutoff:	
Supply-pump ban	8.609.20	Ι	Lietti, silatoir.	
pressure bar: Shutoff	0.007.20	Ι	1st speed 1/min: 425	
	. 10	I	Del. quantity cm3/: 0.003.00	
electromagnet Volt	16	Ι	1000s.: -	
Contact montify of	t avanflav valva:	Ι	Shutoff	
Overlow quantity at	t over tow valve.	I	electromagnet volt: -	
1 mt mand 1/min	500	Ι	etecti dilagnet vott.	
1st speed 1/min	. 500	Ι	Idle delivery:	
Shutoff	. 10	T	tate decivery.	
electromagnet Volt	97.30141.70	T	1st speed 1/min: 425	
Overflow	77.30141.70 700 70 454 701	T	1st speed 1/min: 425 Shutoff	
quantity cm3/10s	1050	T	electromagnet Volt: 12	
	: 1950	T	Del. quantity cm3/: 6.008.00	
Shutoff	. 12	T	10005.: (3.0011.0	U)
electromagnet Volt	115.30184.80	T	Dispersion cm3/: 3.0	0)
		I	1000S.: (4.0)	
quantity cm3/10s	: (100.30199.80)	T	2nd speed 1/min: 500	
Baldinami, minish and	d bearing about	T	Shutoff	
Delivery-quant. and	d breakaway char.:	T	electromagnet Volt: 12	
		T	Pol graptity on 7/1 0 00 8 00	
4 1 4 4/	. 1050	T	Del. quantity cm3/: 0.008.00 1000s.: -	
1nd speed 1/min		Ť	10005	
	: 7.7	Ť	Dont land dal at 3nd init water	
Shutoff	. 12 0	T	Part-load del.at 3rd injqty.	
electromagnet Volt	74 5 79 0 0	Ť	terza fermo della portata	
Del. quantity cm3/	: 30.335.Y D	Ť	stop (EGR set)	
	: (35.240.2) D	Ť	scarico) (ARF)	
	: 2400	†	gaz d'échappement-ARF)	
Shutoff	42	†	4-t	
electromagnet Volt	: 72	†	1st speed 1/min: 1250	
Del. quantity cm3/	: 0.005.00	+	Shutoff	
1000s.	: -	+	electromagnet Volt: 12	

Del. quantity cm3/: 22.50...23.50 1000s.: (20.50...25.50) Automatic starting fuel delivery: 1/min: 300 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40.00...70.00 1000s.: -1/min: 480 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 21.00...31.00 1000\$.: -1/min: 100 4th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40.00...80.00 1000s.: (40.00...80.00) Shutoff electromagnet: Cut-in min voltage : 10.0 : 12.0 Rated voltage Mounting and assembly dimensions: Designation mm: 2.7...2.9 K KF mm: K-OT mm: 1.8 mm: 7.7 MS HBA stroke Remarks: Pump/engine assignment: Attach timing-device cover KDEP 1151. Plunger lift in blocking position = 0.30... 0.40 mm referenced to outlet "A". Overflow restriction 0.75 mm - Part No. ..343,..344

Note inst. in remarks column

Test scheet

: 13.04.92 Edition

replaces

Calibrating oil : ISO-4113

: VE6/11F1500R196 Injection pump : 0 460 416 042 Type number

Customer Part-No. :

Customer-specific information : IVECO-FLAT Customer

: 8060.05.200 Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temo.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

assembly

: 1 688 901 020

Opening |

bar: 172.00...175.00 Pressure

Perforated-plate

mm: 0.6 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mn: 840

x Length

Start of delivery

Indicator setting Piston stroke mm: 1.0 Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1000

Setting value mm: 3.20...3.60

Shutoff

electromagnet Volt: 24

Supply-pump pressure

1/min: 1000 Speed

Setting value bar: 5.40...6.00

Shutoff

electromagnet Volt: 24

Full-load del. w/out charge press.:

1/min: 1300 Speed

Del. quantity cm3/

1000s.: 69.50...70.50

Shutoff

electromagnet Volt: 24 cm3/: (3.5) Dispersion

1000s.: (4.0)

Low-idle speed regulation

1/min: 325 Speed

Del. quantity cm3/ 1000s.: 8.00...12.00

Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 3.0 1000S.: (4.0)

Full-load speed regulation

1/min: 1650

Del. quantity cm3/

1000s.: 41.00...47.00

Shutoff

electromagnet Volt: 24

Start:

1/min: 100 Speed

Del. quantity cm3/: 76.00...126.00

1000s.: 76.00 mind

Shutoff

electromagnet Volt: 24

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 1400 1st speed

mm: 6.20...7.00 TD travel

mm: (5.90...7.30)

electromagnet Volt: 24
3rd speed 1/min: 1000
TD travel mm: 3.20...3.60
mm: (2.70...4.10)

Shutoff

electromagnet Volt: 24

G03

Shutoff 4th speed 1/min: 700 mm: 0.50...1.30 mm: (0.20...1.60) electromagnet Volt: 24 12th speed 1/min: 1300 TD travel Shutoff Shutoff electromagnet Volt: 24 Del. quyntity cm3/: 69.50...70.50 1000s.: (67.00...73.00) electromagnet Volt: 24 Supply-pump pressure characteristic: 1/min: 800 15th speed 1/min: 700 Shutoff 1st speed electromagnet Volt: 24
Del. quantity cm3/: 64.50...67.50
1000s.: (62.50...69.50) Supply-pump bar: 4.20...4.80 pressure Shutoff 20th speed 1/min: 600 electromagnet Volt: 24 2nd speed 1/min: 1000 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 56.00...60.00 1000s.: (54.50...61.50) Supply-pump bar: 5.40...6.00 pressure Shutoff electromagnet Volt: 24 3rd speed 1/min: 1500 3rd speed Mech. shutoff: Mech. Abstellung: Supply-pump bar: 7.40...8.00 pressure Shutoff electromagnet Volt: 24 Shutoff Overlow quantity at overflow valve: electromagnet volt: 24 1/min: 600 1st speed Electr. shutoff: Shutoff electromagnet Volt: 24 : 41.70...83.40 cm3/10s: (26.70...98.40) 1/min: 1500 quantity 1000s.: (0.00...3.00) 2nd speed Shutoff electromagnet Volt: 24 electromagnet volt: -: 55.60...139.00 Overflow Idle delivery: quantity cm3/10s: (40.60...153.00) 1st speed Shutoff 1/min: 325 Delivery-quant. and breakaway char.: electromagnet Volt: 24
Del. quantity cm3/: 8.00...12.00
1000S.: (6.00...14.00)
Dispersion cm3/: 3.0 1/min: 1750 2nd speed Shutoff 1000s.: (4.0) 1/min: 450 2nd speed Shutoff electromagnet Volt: 24
Del. quantity cm3/: 0.00...3.00
1000s.: (0.00...3.00) Shutoff Automatic starting fuel delivery: Shutoff electromagnet Volt: 24
Del. quantity cm3/: 54.00...66.00
1000s.: (52.00...68.00)
9th speed 1/min: 1500 1/min: 200 1st speed Shutoff electromagnet Volt: 24 Del. quantity cm3/: 80.00...130.00 1000s.: (80.00...130.00) Shutoff electromagnet Volt: 24
Del. quantity cm3/: 67.50...70.50
1000S.: (65.50...72.50) 2nd speed 1/min: 320

Shurtoff

electromagnet Volt: 24 Del. quantity cm3/: 24.00...44.00 1000s.: (24.00...44.00)

1/min: 100 4th speed

Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 76.00...126.00 1000s.: (76.00...126.00)

Shutoff electromagnet:

Cut-in

min voltage : 20.0 Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

mm: 3.2...3.4 mm: 5.6...6.0 mm: 1.9...2.1 K KF IIS

Remarks:

**GO5** 

Note inst. in remarks column

: PER 4.0 F Test scheet : 14.04.92 **Edition** : 23.07.91 replaces : ISO-4113 Calibrating oil

: VE4/12F1300R346 Injection pump Type number : 0 460 424 052

Customer Part-No. :

Customer-specific information Customer : PERKINS

: T4.40 110T Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically: 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 020 assembly

Coening

bar: 172.00...175.00 Pressure

Perforated-plate

mm: 0.6 diameter

Test ini. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length

Start of delivery Prestroke mm: -(from BDC): -

Start of delivery block mm: 1,0 Piston stroke

mm: +-0.02(0.06)

: C Outlet

Injection-pump setting values Test specifications in parentheses

Timing device travel

1/min: 1000 Charge press. hPa: 1000

Setting value mm: 1.80...2.20

Shutoff

electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000 Charge press hPa: 1000

Setting value bar: 5.90...6.50 Shutoff

electromagnet Volt: 24

Full-load del. with charge press.:

1/min: 1000 Speed Charge press. hPa: 1000

Del. quantity cm3/

1000s.: 92.00...93.00

Shutoff

electromagnet Volt: 24 Dispersion cm3/: 4.0 1000s.: (4.0)

Full-load del. w/out charge press.:

1/min: 700 Speed

Del. quantity cm3/ 1000s.: 78.50...79.50

Shutoff

electromagnet Volt: 24

Low-idle speed regulation

1/min: 300 Speed

Del. quantity\_cm3/

1000s.: 15.50...19.50

Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 5.0 1000s.: (5.0)

Full-load speed regulation

Speed 1/min: 1440 Charge press hPa: 1000

Del. quantity cm3/

1000s.: 67.00...73.00

electromagnet Volt: 24

Start:

Speed 1/min: 100 Del. quantity cm3/: 110.00...150.00

1000s.: 110.0 mind

Shutoff

electromagnet Volt: 24

+ Shutoff + electromagnet Volt: 24
+ Overflow : 55.60139.00
quantity cm3/10s: (40.60153.00)
Delivery-quant. and breakaway char.:
Ī
Ind speed 1/min: 700
Charge-air pressure-setting
point hPa: 400
LDA-stroke mm: 7.0
† Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 84.5085.50 1000s.: (82.0088.00)
2nd speed 1/min: 1500
Charge press. hPa: 1000
+ Shutofi
+ electromagnet Volt: 24
bel. quantity cm3/: 20.0028.00
10005.: (17.0031.00)
+ 3rd speed 1/min: 1580
+ Charge press. hPa: 1000 + Shutoff
electromagnet Volt: 24
+ Del. quantity cm3/: 0.003.00
+ 1000S.: -
+ 5th speed 1/min: 1440
+ Charge press. hPa: 1000
+ Shutoff
electromagnet Volt: 24 Del. quantity cm3/: 67.0073.00
1000s.: (64.0076.00)
+ 9th speed 1/min: 1300
Charge press. hPa: 1000
+ Shutoff
+ electromagnet Volt: 24
+ Del. quantity cm3/: 90.5093.50
1000s.: (88.5095.50) 10th speed 1/min: 700
+ Charge press. hPa: 1000
Shutoff
+ electromagnet Volt: 24
+ Del. quantity cm3/: 93.0096.00
+ 1000s.: (91.0098.00)
12th speed 1/min: 1000
Charge press. hPa: 1000
- Shutoff - electromagnet Volt: 24
Del. quyntity cm3/: 92.0093.00
1000s.: (89.5095.50)
18th speed 1/min: 700
† Charge press. hPa: -
Shutoff
+ electromagnet Volt: 24
Del. quantity cm3/: 78.5079.50 1000s.: (76.0082.00)
I 10003 (70.0002.00)
T Mech. shutoff:

Mech. Abstellung:

1/min: 1300 1st speed

Del. quantity cm3/: 0.00...3.00

1000s.: (0.00...3.00)

Shutoff

electromagnet volt: 24

Electr. shutoff:

1000s.: (0.00...3.00)

Shutoff

electromagnet volt: -

Idle delivery:

1/min: 300 1st speed

Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 15.50...19.50

1**000**s.: (12.50...22.50)

cm3/: 5.0Dispersion

1000s.: (5.0)

1/min: 350 2nd speed

Shutoff

electromagnet Volt: 24

Del. quantity cm3/: 4.50...10.50 1000s.: (2.50...12.50)

1/min: 400 4th speed

Shutoff

electromagnet Volt: 24

Del. quantity cm3/: 0.00...3.00

1000s.: -

Automatic starting fuel delivery:

1/min: 150 1st speed

Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 120.00...160.00 1000s.: (115.00...165.00)

1/min: 250 2nd speed

Shutoff

electromagnet Volt: 24

Del. quantity cm3/: 65.00...75.00 1000s.: (65.00...75.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 24

Del. quantity cm3/: 110.00...150.00

1000s.: (110.00...150.00)

Shutoff electromagnet:

Cut-in

min voltage : 20.0

G08

: 24.0 Rated voltage

Mounting and assembly dimensions:

Designation

mm: 3,2...3,4 K mm: K-OT KF mm: 0,6...1,0MS

SVS max. mm: 1,8 mm: 20.0...22.0 XK mm: 13,8...17,2 XL

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

\* Correction at adjusting nut (46)

Note inst. in remarks column

: CUM 3,9 P43 Test scheet Edition : 14.04.92 : 15.07.91 replaces Calibrating oil : ISO-4113

: VE4/12F1100R378-7 Injection pump : 0 460 424 074 Type number

Customer Part-No. :

Customer-specific information Customer : CASE

: 4 BT-390 Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening |

bar: 250.00...253.00 Pressure

Perforated plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery

mm: 0,3 Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block mm: 2,35 Piston stroke

mm: +0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 900 Speed

Setting value mm: 2.30...2.70

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 900 Speed

Setting value bar: 4.10...4.70

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 750

Del. quantity cm3/ 1000s.: 63.50...64.50

Shutoff

electromagnet Volt: 12 cm3/: 4.0 Dispersion 1000s.: (4.5)

Low-idle speed regulation

1/min: 500 Speed

Del. quantity cm3/ 1000S.: 6.00...12.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 5.5 1000s.: (7.0)

Full-load speed regulation

1/min: 1170 Speed

Del. quantity cm3/

1000s.: 31.50...38.50

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100 Del. quantity cm3/: 70.00...120.00 mind 1000s.: 70.00

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed

1/min: 1100 mm: 3.10...3.90 TD travel mm: (2.80...4.20)

Shutoff

electromagnet Volt: 12 3rd speed 1/min: 900

	mm: 2.302.70	+ Shutoff
	mm: (1.803.20)	+ electromagnet Volt: 12
Shutoff		Del. quantity cm3/: 60.5063.50 1000s.: (59.0065.00)
electromagnet Vo 4th speed 1/m	OLT: 12	10th speed 1/min: 900
TD travel	mm: 0.701.50	- Shutoff
	mm: (0.401.80)	electromagnet Volt: 12
Shutoff	MM. (070,)	Del. quantity cm3/: 60.8063.80
electromagnet Vo	olt: 12	- 1000\$.: (58.8065.80)
_		+ 12th speed 1/min: 750
Supply-pump pres	ssure characteristic:	- Shutoff
6 - L		electromagnet Volt: 12 Del. quyntity cm3/: 63.5064.50
	nin: 500	1000s.: (61.0067.00)
Supply-pump pressure b	par: 2.403.00	1 20th speed 1/min: 500
Shutoff	341. 2.403.00	+ Shutoff
electromagnet Vo	olt: 12	+ electromagnet Volt: 12
2nd speed 1/m	nin: 900	Del. quantity cm3/: 61.0069.00
Supply-pump		1000s.: (59.0071.00)
	bar: 4.104.70	Mach chutoffs
Shutoff	alè. 10	+ Mech. shutoff: + Mech. Abstellung:
electromagnet Vo 3rd speed 1/m	011: 12 min: 1100	T recti. Abstettung.
Supply-pump	iiii. 1100	1 1st speed 1/min: 1100
pressure t	bar: 4.905.50	bel. quantity cm3/: 0.003.00
Shutoff		+ 1000s.: (0.003.00)
electromagnet Vo	olt: 12	+ Shutoff
		+ electromagnet volt: 12
Overlow quantity	y at overflow valve:	Flectr. shutoff:
1st speed 1/r	min: 500	T Eccel : Shatoir :
Shutoff		+ 1st speed 1/min: 500
electromagnet Vo	olt: 12	+ Del. quantity cm3/: 0.003.00
Overflow	: 41.7083.40	10008:: (0.003.00)
2nd speed 1/r	10s: (26.7098.40)	+ Shutoff + electromagnet volt: -
Shutoff	miri. 1100	T etecti dilagilet vott.
electromagnet Vo	olt: 12	idle delivery:
Overflow	: 55.60139.00	+
quantity cm3/	10s: (40.60154.00)	+ 1st speed 1/min: 500
6.1.5	and laward array about a	+ Shutoff
betivery-quant.	and breakaway char.:	+ electromagnet Volt: 12 + Del. quantity cm3/: 6.0012.00
		10005.: (4.0014.00)
2nd speed 1/s	min: 1260	+ Dispersion cm3/: 5.5
Shutoff		1000s.: (7.8)
electromagnet V		+ 2nd speed 1/min: 570
Del. quantity co	m3/: 0.003.00	+ Shutoff + electromagnet Volt: 12
	00s.: (0.003.00) min: 1190	Del. quantity cm3/: 0.004.00
Shutoff	mm. 1170	10008.: (0.004.00)
electromagnet V	/olt: 12	+
Del. quantity c	:m3/: 10.0040.00	Automatic starting fuel delivery:
100	00s.: (10.0040.00)	+ 44 470
	min: 1170	+ 1st speed 1/min: 130
Shutoff	tal+. 12	+ Shutoff + electromagnet Volt: 12
electromagnet V	m3/: 31.5038.50	Del. quantity cm3/: 70.00130.00
100	100S.: (29.0041.00)	10008: (70.00130.00)
	/min: 1100	+
•		•

2nd speed 1/min: 240 Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 30.00...70.00 1000s.: (30.00...70.00)

4th speed Shutoff 1/min: 100

electromagnet Volt: 12 Del. quantity cm3/: 70.00...120.00 10005.: (70.00...120.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K KF

mm: -mm: K-OT mm: 1,2...1,6 mm: 3,2 MS

SVS max.

Remarks:

: C.D.C. # 391 7528

Note inst. in remarks column

Test scheet : FIA : 14.04.92 Edition : 15.07.91 replaces : ISO-4113 Calibrating oil

: VE4/12F1350R407 Injection pump Type number : 0 460 424 075

Customer Part-No. :

Customer-specific information Customer : IVECO-FIAT

: 8040.25.4000 TC Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically: 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening |

bar: 250.00...253.00 Pressure

Perforated-plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450 x Length

Start of delivery Prestroke mm: -(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1000 Speed 3 Charge press. hPa: 1000 Setting value mm: 1.40...1.80 Shutoff

electromagnet Volt: 24

Supply-pump pressure

1/min: 1000 Speed

Charge press hPa: 1000 Setting value bar: 5.70...6.30

Shutoff

electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 700 Charge press. hPa: 1000 Del. quantity cm3/ 1000s.: 79.00...80.00

Shutoff electromagnet Volt: 24 Dispersion cm3/: 3.5

1000s.: (5.0)

Full-load del. w/out charge press.:

1/min: 600 Speed

Del. quantity cm3/ 1000s.: 64.00...65.00

Shutoff

electromagnet Volt: 24

Low-idle speed regulation

1/min: 350 Del. quantity cm3/ 1000s.: 13.00...17.00

Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 3.5 1000s.: (5.0)

Full-load speed regulation

1/min: 1525 Speed hPa: 1000 Charge press

Del. quantity cm3/ 1000s.: 30.00...36.00

Shutoff

electromagnet Volt: 24

Start:

1/min: 100

Del. quantity cm3/: 60.00...110.00

mind 1000s.: 60.00

Shutoff

electromagnet Volt: 24

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:	+ Charge-air pressure-setting
0 1 1 4/4 4400	+ point hPa: 375
2nd speed 1/min: 1100	+ LDA-stroke mm: 6,7
Charge press hPa: 1000	+ Shutoff
TD travel nm: 2.203.00	+ electromagnet Volt: 24
mm: (1.703.50)	Del. quantity cm3/: 64.0065.00
Shutoff	1000s.: (60.5068.50)
electromagnet Volt: 24	+ 2nd speed 1/min: 1600
3rd speed 1/min: 1000	+ Charge press. hPa: 1000
Charge press hPa: 1000	- Shutoff
TD travel mm: 1.401.80	+ electromagnet Volt: 24
mm: (0.702.50)	+ Del. quantity cm3/: 0.003.00
5th speed 1/min: 1350	1000s.: (0.003.00)
Charge press. hPa: 1000	→ 5th speed 1/min: 1525
TD travel mm: 3.704.50	Charge press. hPa: 1000
mm: (3.205.00)	+ Shutoff
Shutoff	+ electromagnet Volt: 24
electromagnet Volt: 24	Del. quantity cm3/: 30.0036.00
etectionagnet vott. 24	10005.: (27.0039.00)
Supply-pump pressure characteristic:	+ 8th speed 1/min: 1475
supply-pump pressure characteristic.	Charge press. hPa: 1000
1 - 4	+ Shutoff
1st speed 1/min: 600	
Charge press. hPa: 1000	+ electromagnet Volt: 24
Supply-pump	+ Del. quantity cm3/: 43.0051.00
pressure bar: 3.704.30	1000\$.: (41.0053.00)
Shutoff	+ 9th speed 1/min: 1350
electromagnet Volt: 24	+ Charge press. hPa: 1000
2nd speed 1/min: 1000	+ Shutoff
Charge press. hPa: 1000	+ electromagnet Volt: 24
Supply-pump	+ Del. quantity cm3/: 69.5072.50
pressure bar: 5.706.30	1000s.: (67.5074.50)
Shutoff	+ 10th speed 1/min: 1200
electromagnet Volt: 24	+ Charge press. hPa: 1000
3rd speed 1/min: 1350	+ Shutoff
Charge press. hPa: 1000	electromagnet Volt: 24
Supply-pump	+ Del. quantity cm3/: 72.0076.00
pressure bar: 7.508.10	10008.: (70.5077.50)
Shutoff	12th speed 1/min: 700
electromagnet Volt: 24	- Charge press. hPa: 1000
etectionagnet vott. L4	+ Shutoff
Overal ou quantity at eventlow valve:	electromagnet Volt: 24
Overlow quantity at overflow valve:	Del. quyntity cm3/: 79.0080.00
1-4	10005.: (76.0083.00)
1st speed 1/min: 600	
Charge press. hPa: 1000	
Shutoff 2/	+ Charge press. hPa: -
electromagnet Volt: 24	+ Shutoff
Overflow : 41.7083.40	electromagnet Volt: 24
quantity cm3/10s: (26.7098.40)	+ Del. quantity cm3/: 45.5046.50
2nd speed 1/min: 1350	10005.: (42.5049.50)
Charge press. hPa: 1000	20th speed 1/min: 600
Shutoff	Charge press. hPa: 1000
electromagnet Volt: 24	+ Shutoff
Overflow : 55.60139.00	+ electromagnet Volt: 24
quantity cm3/10s: (40.60154.00)	+ Del. quantity cm3/: 82.5086.50
•	+ 1000s.: (81.0088.00)
Delivery-quant. and breakaway char.:	+ 21th speed 1/min: 500
and the second of the second o	+ Charge press. hPa: -
	+ Shutoff
1nd speed 1/min: 600*	+ electromagnet Volt: 24
The special control see	+
	•

Del. quantity cm3/: 44.00...48.00 1000s.: (42.00...50.00) Mech. shutoff: Mech. Abstellung: 1st speed 1/min: 1350 Charge press. hPa: 1000 Del. quantity cm3/: 0.00...3.00 1000s.: -Shutoff electromagnet volt: 24 Electr. shutoff: 1/min: 350 1st speed Del. quantity cm3/: 0.00...3.00 1000s.: -Shutoff electromagnet volt: -Idle delivery: 1st speed 1/min: 350 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 13.00...17.00 1000s.: (10.00...20.00) Dispersion cm3/: 3.5 1000s.: (5.0) 1/min: 475 2nd speed Shutoff electromagnet Volt: 24

Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 60.0

Del. quantity cm3/: 60.00...110.00 1000s.: (60.00...110.00)

2nd speed 1/min: 250 Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 45.00...65.00 1000s.: (45.00...65.00)

4th speed 1/min: 100 Shutoff

electromagnet Volt: 24

Del. quantity cm3/: 60.00...110.00 1000s.: (60.00...110.00)

Shutoff electromagnet:

Cut-in

min voltage : 20.0

Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K mm: 3,7
KF mm: K-OT
MS mm: 0,7...1,1
LDA stroke mm: 6,7

Operate control lever after each manifold-pressure compensator pressure change.

\* Correction at adjusting nut (46)

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Note inst. in remarks column

: CDC 3,9 P60 Test scheet : 14.04.92 Edition : 15.01.92 replaces : ISO-4113 Calibrating oil

: VE4/12F1250R424 Injection pump : 0 460 424 079 Type number

Customer Part-No. :

Customer-specific information Customer

: 4 BTAA 3.9 Engine

KW: 79 Power 1/min: 2500 Speed

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer: 40.00...48.00 Electronically: 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle holder

: 1 688 901 109 assembly

Opening

bar: 207.00...210.00 Pressure

Perforated plate

mm: 0.5 diameter

Test ini. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery Prestroke mm: -(from BDC): -

Start of delivery block mm: 1.2 Piston stroke

mm: 0.02(0.06)

Out Let : A

Injection pump setting values

Test specifications in parentheses

Timing-device travel

1/min: 850 Speed Charge press. ha: 1000 Setting value mm: 1.00...1.40

AFB/AFB

Volt: valve

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1100 Speed hPa: 1000 Charge press

Setting value bar: 6.90...7.50

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 850 Speed Charge press. hPa: 1000 Del. quantity cm3/

1000s.: 85.50...86.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 5.0 1000s.: (5.0)

Full-load del. w/out charge press.:

1/min: 500 Speed

Del. quantity cm3/

1000s.: 53.50...54.50

Shutoff

electromagnet Voli: 12 Dispersion cm3/: 5.0 1000s.: (6.0)

Low-idle speed regulation

1/min: 400 Speed

Del. quantity cm3/ 1000s.: 14.50...18.50

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 5.5 1000s.: (7.0)

Full-load speed regulation

1/min: 1335 Charge press hPa: 1000

Del. quantity cm3/ 1000s.: 74.00...80.00

Shutoff

electromagnet Volt: 12

Start:	+		er l
Speed 1/min: 100	1	Overlow quantity at	overflow valve:
Del. quantity cm3/: 115.00	165.00	1st speed 1/min:	500
mind 1000s.: 115.0	+	Shutoff	
Shutoff	+	electromagnet Volt:	12
electromagnet Volt: 12	<b>†</b>	Overflow cm3/10s:	41./U83.40 /24.70
Inspection was test specific	ations I	2nd speed 1/min:	1250
Inspection-pump test specific Test specifications in parent	heses	Charge press. hPa:	1000
rese specificacions in parene	110000	Shutoff	
Timing device characteristic:	+	electromagnet Volt:	12
	+	Overflow :	55.60139.00
2nd speed 1/min: 1250	†	quantity cm3/10s:	(40.00154.00
Charge press hPa: 1000 mm: 2.102.	on I	Delivery-quant. and	hreakauay char
mm: (1.803	(20) I	betively quality and	Di Caraway Chai.
Shutoff	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
electromagnet Volt: 12	1	1nd speed 1/min:	
3rd speed 1/min: 850	+	Charge-air pressure	-setting
Charge press hPa: 1000	,,	point hPa:	300
TD travel mm: 1.001.		Shutoff	12
mm: (0.501	.90)	electromagnet Volt: Del. quantity cm3/:	49 nn. 70.00
electromagnet Volt: 12	I	1000S.:	(65.5073.50)
8th speed 1/min: 450	1	2nd speed 1/min:	1500
Charge press. hPa: -	+	Charge press. hPa:	1000
TD travel mm: 2.003.	.00 +	Shutoff	
mm: (1.803	7.20)	electromagnet Volt:	12
KSB/AFB	†	Del. quantity cm3/: 1000s.:	- 0.005.00
valve Volt: 12	1	3rd speed 1/min:	
Shutoff electromagnet Volt: 12	Ţ	Charge press. hPa:	1000
etetti allagilet vott. (2	1	Shutoff	
Supply-pump pressure characte	eristic:	electromagnet Volt:	12
	+	Del. quantity cm3/:	15.0045.00
1st speed 1/min: 850	+	1000\$.:	
Charge press. hPa: 1000	†	5th speed 1/min: Charge press. hPa:	
Supply-pump pressure bar: 5.506	10 I	Shutoff	1000
pressure bar: 5.506. Shutoff	. 10	electromagnet Volt:	12
electromagnet Volt: 12	+	Del. quantity cm3/:	72.0078.00
2nd speed 1/min: 1100	+	10005.:	(72.0078.00)
Charge press. hPa: 1000	+	9th speed 1/min:	
Supply-pump	50	Charge press. hPa: Shutoff	1000
pressure bar: 6.907. Shutoff	. Ju	electromagnet Volt:	12
electromagnet Volt: 12	I	Del. quantity cm3/:	81.0086.00
3rd speed 1/min: 1250	+	1000s.:	(79.5087.50)
Charge press. hPa: 1000	+	10th speed 1/min:	
Supply-pump	+	Charge press. hPa:	1000
pressure bar: 7.508	ל טוי.	Shutoff	12
Shutoff	†	electromagnet Volt: Del. quantity cm3/:	84 NO 80 NO
electromagnet Volt: 12 4th speed 1/min: 500	Ī	Poet. quantity this.	(82.5090.50)
Charge press. hPa: 1000	I	12th speed 1/min:	
Supply-pump	1	Charge press. hPa:	
pressure bar: 4.004	.60	Shutoff	
Shutoff	+	electromagnet Volt:	12
electromagnet Volt: 12	+		

Del. quyntity cm3/: 85.50...86.50

1000s.: (83.00...89.00)

1/min: 500 18th speed Charge press. hPa: -

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 53.50...54.50 1000s.: (50.00...58.00)

Mech. shutoff: Mech. Abstellung:

1st speed 1/min: 1250
Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00)

Shutoff

electromagnet volt: 12

Electr. shutoff:

1/min: 400 1st speed

Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00)

Shutoff

electromagnet volt: -

Idle delivery:

1/min: 400 1st speed

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 14.50...18.50 1000S.: (11.50...21.50) Dispersion cm3/: 5.5

1000s.: (7.0)

1/min: 490 2nd speed

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 0.00...3.00

1000s.: -

Automatic starting fuel delivery:

1st speed 1/min: 130

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 140.00...190.00

1000s.: -

1/min: 240 2nd speed

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 40.00...70.00 1000s.: -

1/min: 100 4th speed

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 115.00...165.00 1000s.: -

Shutoff electromagnet:

Cut-in

min voltage : 10,0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

mm: 3.5...3.9 K KF mm: K-01 mm: 0.8...1.2 MS SVS max. mm: -

mm: 7.0 LDA stroke

Remarks:

: C.D.C. # 391 3443

Heavy-duty fuel-injection pump for DI-engines: only test using timingdevice-travel measuring device with metal jacket

\* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

Note inst. in remarks column

Test scheet : 09.04.92 Edition replaces : 12.07.91 : ISO 4113 Calibrating oil

: VE4/12F1100R378-8 Injection pump : 0 460 424 081 Type number

Customer-specific information

Customer : CDC

Engine : 4 BT

KW: 67 Power 1/min: 2200 Speed

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer: 40.0...48.00 : 42.00...50.00 Electronically

Inlet press., bar: 0,30...0,40

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250.00...253,00 Pressure

Perforated plate

diameter mm: 0.5

Test ini. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Start of delivery block mm: 1,8 Piston stroke

mm: +-0.02(0.06)

: A Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 900 Speed

Setting value mm: 2,3...2,7

Shutof?

electromagnet Volt: 12

Supply-pump pressure

1/min: 900 Speed

Setting value bar: 4,1...4,7

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 900

Del. quantity cm3/

10**0**0s.: **6**8,0...69.0

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 4,0 1000s.: (4,5)

Low-idle speed regulation

1/min: 475 Speed

Del. quantity cm3/ 1000s.: 10,5...16,5

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 5,5 1000S.: (7,0)

Full-load speed regulation

1/min: 1175 Speed Del. quantity cm3/ 1000s.: 32,5...37,5

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed Del. quantity cm3/: -mind 1000s.: 65,0

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 750 1st speed

mm: 1,3...2,1 mm: (1,0...2,4) TD travel

electromagnet Volt: 12 1/min: 900 2nd speed

TO travel mm:	2,32,7	+	Del. quantity cm3/: 65,568,5
mm:	(1,83,2)	+	1000s.: (64,070,0)
Shutoff		+	5th speed 1/min: 900
electromagnet Volt:	12	+	Shutoff
3rd speed 1/min:	1100	+	electromagnet Volt: 12
TD travel mm:	3,44,1 (3,04,4)	+	Del. quantity cm3/: 68,069,0
mer:	(3,04,4)	Ť	10008.: (65,571,5)
		†	6th speed 1/min: 750
Supply-pump pressure	e characteristic:	†	Shutoff electromagnet Volt: 12
1st speed 1/min:	500	T	Del. quantity cm3/: 70,074,0
	300	I	10008:: (68,076,0)
Supply-pump bar:	2,32,9	<b>I</b> .	7th speed 1/min: 500
Shutoff	<i>L/3L//</i>	1	Shutoff
electromagnet Volt:	12	1	electromagnet Volt: 12
2nd speed 1/min:	900	1	Det. quantity cm3/: 70,078,0
Supply-pump	. 50	+	1000s.: (68,080,0)
pressure bar:	4,14,7	- t- ,	
Shutoff		+	Mech. shutoff:
electromagnet Volt:	12	+	Mech. Abstellung:
3rd speed 1/min:	1100	+	44.00
Supply-pump		+	1st speed 1/min: 1100
	4,95,5	+	Del quantity cm3/: 0,03,0
Shutoff		†	1000S.: -
electromagnet Volt:	12	+	Shutoff
Overlas a montática et	overflou valva:	I	electromagnet volt: 12
Overlow quantity at	over tow valve.	I	Electr. shutoff:
1st speed 1/min:	500	I	Lecti. Sideoii.
Shutoff	<i>35</i> 0	1	1st speed 1/min: 475
electromagnet Volt:	12	1	Del. quantity cm3/: 0,03,0
Overflow :	4183	+	Shutoff
quantity cm3/10s:	(2698)	+	electromagnet volt: -
2nd speed 1/min:	1103	+	
Shutoff		+	Idle delivery:
electromagnet Volt:	12	+	A
Overflow :	55138	+	1st speed 1/min: 475
quantity cm3/10s:	(40154)	†	Shutoff
Sale and an annual same	l'handen in cahan a	†	electromagnet Volt: 12 Del. quantity cm3/: 10,516,5
Delivery quant. and	Dreakaway Char.:	T	1000s.: (8,518,5)
		Ι	2nd speed 1/min: 550
1nd speed 1/min:	1230	I	Shutoff
Shutoff		+	electromagnet Volt: 12
electromagnet Volt:	12	+	Del. guantity cm3/: 0,03,0
Del. quantity cm3/:	0,03,0	+	1000s.: -
1000s.:	<del>-</del>	+	
2nd speed 1/min:	: 1175	+	Automatic starting fuel delivery:
Shutoff		+	4
electromagnet Volt:	12	+	1st speed 1/min: 130
Del. quantity cm3/: 1000s.:	32,537,5	†	Shutoff
	(	†	electromagnet Volt: 12 Del. quantity_cm3/: 80,0120,0
3rd speed 1/min:	TIOU	Ī	1000s.: -
Shutoff	12	Ι	10000
electromagnet Volt: Del. quantity cm3/:	34.071.0	I	2nd speed 1/min: 240
1900S.:	- <del> </del>	1	Shutoff
4th speed 1/min:		+	electromagnet Volt: 12
Shutoff		+	Del. quantity cm3/: 40,080,0
electromagnet Volt:	: 12	+	1000s.: -
		•	

# Shutoff electromagnet:

Cut-in min voltage : 10,0 Rated voltage : 12,0

# Mounting and assembly dimensions:

Designation

mm: -mm: 5,0...5,4 mm: 1,1...1,5 mm: 3,2 K KF MS

SVS max.

Remarks:

Overflow restriction 0.55 mm - Part No. ..303

Note inst. in remarks column

Test scheet : MAX : 14.04.92 Edition : 10.10.91 replaces : ISO 4113 Calibrating oil

: VE4/12F1400R454 Injection pump : 0 460 424 082 Type number

Customer Part-No. :

Customer-specific information Customer : MAXON

: \$4 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening |

bar: 130.00...133.00 Pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm: 450 x Length

Start of delivery Prestroke

mm: 0.3 (from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1000 Speed Setting value mm: 2.3...2.7

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1000 Speed

Setting value bar: 5.0...5.6

Shutof1

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1000 Speed

Del. quantity cm3/ 1000s.: 83.0...84.0

Shutoff

electromagnet Volt: 12 cm3/: 4.0Dispersion 1000s.: (4.5)

Low-idle speed regulation

1/min: 350 Speed

Del. quantity cm3/ 1000s.: 28.0...32.0

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.5 1000s.: (5.0)

Full-load speed regulation

1/min: 1480 Speed

Del. quantity cm3/ 1000s.: 57.0...63.0

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 80.0...120.0 mind 1000s.: 80.0

mind

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 800 1st speed

mm: 0.5...1.3 TD travel

mm: (0.2...1.6)

electromagnet Volt: 12 2nd speed

1/min: 1000 mm: 2.3...2.7 mm: (1.8...3.2) TD travel

Shutoff

electromagnet Volt: 12 1/min: 1350 3rd speed

mm: 3.8...4.6 TD travel mm: (3.5...4.9)

Supply-pump pressure characteristic:

1st speed 1	l/min:	800 +	
Supply-pump		+	1st speed 1/min: 350
pressure	bar:	4.14.7	Del. quantity cm3/: 0.03.0
Shutoff			10005.: -
electromagnet	Volt:	12	Shutoff
2nd speed '	1/m1n:	1000	electromagnet volt: -
Supply-pump	<b>h</b>	5.05.6	Idle delivery:
pressure Shutoff	nar;	j.u.,,j.o	Total delivery.
electromagnet	Val+	12	1st speed 1/min: 350
3rd speed	1/min:	1350	Shutoff
Supply-pump		+	electromagnet Volt: 12
pressure	bar:	6.57.1	Del. quantity cm3/: 28.032.0
Shutoff		·	10005.: (26.034.0)
electromagnet	Volt:	12 +	2nd speed 1/min: 400
	•	†	Shutoff
Overlow quant	ity at	overflow valve:	electromagnet Volt: 12
1 at amount	1/min:	500	Del. quantity cm3/: 8.016.0 1909s.: (6.018.0)
1st speed Shutoff	1/01/21:	1	3rd speed 1/min: 450
electromagnet	Volt:	12	Shutoff
Overflow	<b>VOCC</b> :	4183	electromagnet Volt: 12
quantity cm	3/10s:	(2698)	Del. quantity cm3/: 0.06.0
2nd speed	1/min:	1350	1000s.: -
Shutoff		+	
electromagnet	Volt:	12 +	Automatic starting fuel delivery
Overflow	7 (40	55138	1-h amond 1/mins 100
quantity cm	3/1Us:	(40155)	1st speed 1/min: 100 Shutoff
Dol i vom-duan	أمداد خ	breakaway char.:	electromagnet Volt: 12
vet ively quali	L. CIN	b. eakaway crisi	Del. quantity cm3/: 80.0120.0
			1000s.: -
1nd speed	1/min:	1535	
Shutoff		+	2nd speed 1/min: 250
electromagnet	Volt:	12 +	Shutoff
Del. quantity	cm3/:	27.037.0	electromagnet Volt: 12
		(20.040.0)	Del. quantity cm3/: 20.060.0 1000s.: -
	1/min:	1480	10003
Shutoff electromagnet	Vol+	12 I	Shutoff electromagnet:
Del. quantity	cm3/:	57.063.0	origion in a coot of one of the
1	000s.:	(54.066.0)	Cut-in
	1/min:		min voltage : 10.0
Shutoff		+	Rated voltage : 12.0
electromagnet	: Volt:	12 +	Marine Administration and a second by the discount form
Del. quantity	cms/:	(7.081.0	Mounting and assembly dimensions
	1/min:	(75.582.5)	Designation
4th speed Shutoff	17101113	I	K. mm: -
electromagnet	Volt:	12	K; "mm: - KF "mm: 5,25,6
Del. quantity	cm3/:	83.084.0	MS mm: 0.71.1
1	000s.	(80.586.5)	
5th speed	1/min:		Remarks:
Shutoff		+	
electromagnet	: Volt:	12 +	
Del. quantity	/ cm3/:	† 12.U	
	iuuus.	(50.060.0)	
Mech. shutofi	F.	I	
Mech. Abstell		I	
TRUTTE AUGUST	·	1	

Note inst. in remarks column

: CUM Test scheet : 09.04.92 Edition

replaces

Calibrating oil : ISO-4113

: VE4/12F1100R378-9 Injection pump : 0 460 424 084 Type number

Customer Part-No. :

Customer-specific information

Customer

Engine : 4 BT 3.9 IND.

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening.

bar: 250.00...253.00 Pressure

Perforated plate

mm: 0.5 diameter

Test inj. tubing : 1 688 901 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery

Prestroke mm: 0.3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1.80

mm: +-0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 900 Speed

Setting value mm: 2.30...2.70

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 900 Speed

Setting value bar: 4.10...4.70

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 900 Speed

Del. quantity cm3/ 1000s.: 73.00...74.00

Shutoff

electromagnet Volt: 12 cm3/: 4.0 Dispersion 1000s.: (4.5)

Low-idle speed regulation

1/min: 350 Speed

Del. quantity cm3/ 1000s.: 15.00...21.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 5.5 1000s.: (7.0)

Full-load speed regulation

1/min: 1160 Speed

Del. quantity cm3/ 1000s.: 47.00...77.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100 Del. quantity cm3/: 75.00...125.00 mind 1000s.: 75.00

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 1100 2nd speed

mm: 3.10...3.90 TD travel

mm: (2.80...4.20)

Shutoff

electromagnet Volt: 12 1/min: 900 3rd speed

mm: 2.30...2.70 mm: (1.80...3.20) Shutoff TD travel electromagnet Volt: 12 Del. quantity cm3/: 69.00...72.00 1000\$:: (67.50...73.50) Shutoff 12th speed 1/min: 900 Shutoff electromagnet Volt: 12 Del. quyntity cm3/: 73.00...74.00 1000s.: (70.50...76.50) Shutoff alactromacnet Volt: 12 1/min: 500 20th speed Shutoff Supply-pump pressure characteristic: electromagnet Volt: 12 Del. quantity cm3/: 77.50...85.50 1000s.: (75.50...87.50) 1/min: 500 1st speed Supply-nump bar: 2.30...2.90 pressure Mech. shutoff: Shutoff electromagnet Volt: 12 2nd speed 1/min: 900 Mech. Abstellung: 2nd speed Supply-pump bar: 4.10...4.70 pressure Shutoff electromagnet Volt: 12 3rd speed 1/min: 1100 Shutoff electromagnet volt: 12 Supply-pump bar: 4.90...5.50 Electr. shutoff: pressure Shutoff 1st speed 1/min: 350 electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 Shutoff Overlow quantity at overflow valve: electromagnet volt: -1st speed 1/min: 500 Idle delivery: Shutoff electromagnet Volt: 12 1/min: 350 : 41.70...83.40 1st speed Overflow cm3/10s: (26.70...98.40) Shutoff quantity electromagnet Volt: 12 Del. quantity cm3/: 15.00...21.00 2nd speed 1/min: 1100 Shutoff 1000s.: (13.00...23.00) cm3/: 5.5 1000s.: (7.0) 1/min: 490 electromagnet Volt: 12 Overflow : 55.60...139.00 Dispersion cm3/10s: (40.60...154.00) quantity 2nd speed Shutoff Delivery-quant. and breakaway char .: electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 1000s.: -1/min: 1220 2nd speed Shutoff electromagnet Volt: 12
Del. quantity cm3/: 0.00...3.00
1000S.: 5th speed 1/min: 1160 Automatic starting fuel delivery: 1st speed 1/min: 130 Shutoff 5th speed electromagnet Volt: 12 Del. quantity cm3/: 90.00...130.00 1000s.: -Shutoff electromagnet Volt: 12 Del. quantity cm3/: 32.50...37.50 1000S.: (30.00...40.00) 8th speed 1/min: 1130 1/min: 240 2nd speed 8th speed Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 47.00...77.00 1000s.: electromagnet Volt: 12 Del. quantity cm3/: 40.00...80.00 1000s.: -1/min: 1100

9th speed

4th speed 1/min: 100 Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 75.00...125.00 10005.: -

## Shutoff electromagnet:

Cut-in

min voltage : 10,0 Rated voltage : 12.0

# Mounting and assembly dimensions:

Designation

mm: -

K KF mm: 5.0...5.4 mm: 1.2...1.4 mm: 18.8...20.8 mm: 12.5...15.9 MS XK XL.

Remarks:

: C.D.C. # 3 920 853

Note inst. in remarks column

Test scheet

: 14.04.92 Edition

replaces

Calibrating oil : ISO-4113

Injection pump : VE4/12F1250R468 : 0 460 424 086 Type number

Customer Part-No. :

Customer-specific information : IVECO-FIAT Customer

: 8040.45.4180 Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically: 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening |

bar: 250.00...253.00 Pressure

Perforated plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 nm: 450

x Length

Start of delivery

Indicator setting

Piston stroke mm: 1.0

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1000 Speed Charge press. hPa: 1000 Setting value mm: 2.60...3.00

Shutoff

electromagnet Volt: 24

Supply-pump pressure

1/min: 1000 Speed

Charge press hPa: 1000

Setting value bar: 6.50...7.10

Shutoff

electromagnet Volt: 24

Full-load del. with charge press.:

1/min: 700 Speed Charge press. hPa: 1000

Del. quantity cm3/ 1000s.: 78.50...79.50

Shutoff

electromagnet Volt: 24 Dispersion cm3/: 3.5 1000s.: (5.0)

Full-load del. w/out charge press.:

1/min: 600 Speed

Del. quantity cm3/

1000s.: 43.50...44.50

Shutoff

electromagnet Volt: 24

Low-idle speed regulation

1/min: 350 Speed

Del. quantity cm3/ 1000s.: 13.00...17.00

Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 3.5 1000s.: (5.0)

Full-load speed regulation

1/min: 1425

Charge press hPa: 1000 Del. quantity cm3/

1000s.: 22.00...28.00

Shutoff

electromagnet Volt: 24

Start:

1/min: 100 Speed

Del. quantity cm3/: 60.00...110.00 mind 1000s.: 60.00

Shutoff

electromagnet Volt: 24

Inspection-pump test specifications Test specifications in parentheses

		+	Shutoff	
Timing-device charac	teristic:	+	electromagnet Volt: 24 Overflow : 97.30180.70	)
2nd speed 1/min: Charge press hPa:		t	quantity cm3/10s: (97.30180.7	70
TD travel mm:	3.604.40 (3.104.90)	-	Delivery-quant. and breakaway char	٠,
Shutoff		+	44 4 400	
electromagnet Volt:	24	+	1nd speed 1/min: 600	
3rd speed 1/min:	1000	†	Charge-air pressure setting	
Charge press hPa:		†	point hPa: 500*	
TD travel mm:	2.603.00	†	Shutoff	
	(1.903.70)	†	electromagnet Volt: 24	
Shutoff	2/	†	Del. quantity cm3/: 63.0064.00 1000s.: (59.5067.50	3)
electromagnet Volt:	£4 600	T	2nd speed 1/min: 1500	"
4th speed 1/min: Charge press hPa:	4000	I	Charge press. hPa: 1000	
Charge press hPa: TD travel mm:	0.10 0.90	Ι	Shutoff	
in traver	(0.001.40)	Ι	electromagnet Volt: 24	
Shutoff	(0.00	I	Del. quantity cm3/: 0.003.00	
electromagnet Volt:	24	1	1000s.: (0.003.00)	
5th speed 1/min:	1250	1	5th speed 1/min: 1425	
Charge press. hPa:	1000	+	Charge press. hPa: 1000	
TD travel mm:	3.704.50	+	Shutoff	
irm:	(3.205.00)	4	electromagnet Volt: 24	
Shutoff		╁	<pre>Del. quantity cm3/: 22.0028.00</pre>	
electromagnet Volt:	24	+	1000S.: (19.0031.0	3)
		+	9th speed 1/min: 1250	
Supply-pump pressure	e characteristic:	†	Charge press. hPa: 1000 Shutoff	
1st speed 1/min:	600	${ m I}$	electromagnet Volt: 24	
Charge press. hFa.	3000	I	Del. quantity cm3/: 70.0073.00	
Supply-pump		1	1000s.: (68.0075.0	D)
pressure bar:	4.004.60	+	10th speed 1/min: 1000	
Shutoff		+	Charge press. hPa: 1000	
electromagnet Volt:	24	+	Shutoff	
2nd speed 1/min:	1000	+	electromagnet Volt: 24	
Charge press. hPa:	1000	+	Del. quantity cm3/: 71.0075.00	
Supply-pump		+	1000s.: (69.5076.5	U
pressure bar:	6.507.10	+	12th speed 1/min: 700	
Shutoff	01	†	Charge press. hPa: 1000	
electromagnet Volt:	4250	†	Shutoff	
3rd speed 1/min:	1000	†	electromagnet Volt: 24 Del. quyntity cm3/: 78.5079.50	ı
Charge press. hPa:	1000	T	1000s.: (75.5082.5	U,
Supply-pump har:	7.708.30	I	18th speed 1/min: 600	<b>U</b> .,
pressure bar: Shutoff	7.700.55	I	Charge press. hPa: -	
electromagnet Volt:	24	1	Shutoff	
ecectionagnes total		1	electromagnet Volt: 24	
Overlow quantity at	overflow valve:	+	Del. quantity cm3/: 43.5044.50	ļ
		+	1000s.: (40.5047.5	0
1st speed 1/min:		+		
Charge press. hPa:	1000	+	Mech. shutoff:	
Shutoff		+	Mech. Abstellung:	
electromagnet Volt:	25 04 440 54	†	1st speed 1/min. ADEA	
Overflow ==7/10	75.06119.54	†	1st speed 1/min: 1250	
quantity cm3/10s:	1250	I	Charge press. hPa: 1000 Del. quantity cm3/: 0.003.00	
2nd speed 1/min:	1000	I	1000s.: (8.003.00)	ļ
Charge press. hPa:	1000	T	1000014 30,0011131007	

Shutoff electromagnet volt: 24 Electr. shutoff: 1/min: 350 1st speed Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: -Idle delivery: 1st speed 1/min: 350 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 13.00...17.00 1000s.: (10.00...20.00) Dispersion cm3/: 3.5 1000s.: (5.0) 2nd speed 1/min: 475 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Automatic starting fuel delivery: 1/min: 130 1st speed Shutoff electromagnet Volt: 24 Del. quantity cm3/: 60.00...110.00 1000s.: (60.00...110.00) 2nd speed 1/min: 230 Shutoff electromagnet Volt: 24
Del. quantity cm3/: 30.00...50.00
1000s.: (30.00...50.00) 4th speed 1/min: 100 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 60.00...110.00 1000s.: (60.00...110.00) Shutoff electromagnet: Cut-in min voltage : 20.0 : 24.0 Rated voltage

Mounting and assembly dimensions:

mm: 3.2...3.8

mm: KOT mm: 0.7...1.1 Operate control lever after each manifold-pressure compensator pressure change.

G28

Remarks:

K KF

MS

Designation

Note inst. in remarks column

Test scheet : 18.03.92 Edition : 09.11.88 replaces : ISO-4113 Calibrating oil

: VE6/12F1250R173-8 Injection pump : 0 460 426 101 Type number

Customer Part-No. :

Customer-specific information : CUMMINS/GB Customer

: 6 BTA-590 Engine

1/min: 1250 Speed

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer : 44.00...46.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 247.00...253.00 Pressure

Test inj. tubing : Lochduese 0,5 mm

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 750 Speed Charge press. hPa: 1000

Setting value mm: 1.40...1.80

Supply-pump pressure

1/min: 750 Speed Charge press hPa: 1000

Setting value bar: 3.20...3.80

Full-load del. with charge press.:

1/min: 750 Speed Charge press. hPa: 1000

Del. quantity cm3/ 1000s.: 82.00...83.00

cm3/: 4.0 Dispersion 1000S .: (4.5)

Full-load del. w/out charge press.:

1/min: 500 Speed

Del. quantity cm3/ 1000s.: 40.00...41.00

Low-idle speed regulation

1/min: 375

Del. quantity cm3/

1000s.: 4.00...8.00

Del. quantity cm3/: 5.5 1000s.: (7.0)

Full-load speed regulation

1/min: 1300 Speed hPa: 1000 Charge press

Del. quantity cm3/

1000s.: 65.00...71.00

Start:

Speed 1/min: 100 Del. quantity cm3/: 70.00...120.00

1000s.: 70.00

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 1050 2nd speed hPa: 1000 Charge press

mm: 2.30...3.10 TD travel mm: (2.00...3.40)

3rd speed 1/min: 750

hPa: 1000 Charge press

mm: 1.40...1.80 TD travel mm: (0.90...2.30)

1/min: 600 4th speed

hPa: 1000 Charge press mm: 0.40...1.20 TD travel

mm: (0.10...1.50)

Supply-pump pressure characteristic:

1st speed 1/min: 500 Charge press. hPa: 1000

Supply-pump

bar: 2.10...2.70 bar: (1.90...2.90) pressure

1/min: 750 2nd speed

Charge press. hPa: 1000 Supply-pump Delivery-quant. and breakaway char.: Inj.-qty.values,temp.-compensated bar: 3.20...3.80 pressure bar: (3.00...4.00) temperatura 1/min: 1050 3rd speed Charge press. hPa: 1000 1st speed 1/min: 700 Charge-air pressure-setting Supply-pump bar: 4.30...4.90 bar: (4.10...5.10) hPa: 450 pressure point Del. quantity cm3/: 67.00...68.00 1000S.: (63.00...72.00) 2nd speed 1/min: 1400 Charge press. hPa: 1000 Del. quantity cm3/: 0.00...3.00 1000S.: (0.00...3.00) 3rd speed 1/min: 1330 Overlow quantity at overflow valve: 1st speed Overflow 1/min: 500 : 41.70...83.40 cm3/10s: (41.70...83.40) quantity Charge press. hPa: 1000 Del. quantity cm3/: 15.50...55.50 1000s.: (15.50...55.50) 1/min: 1250 2nd speed Charge press. hPa: 1000 Overflow: 55.60 : 55.60...139.00 cm3/10s: (55.60...139.00) 1/min: 1300 5th speed quantity Charge press. hPa: 1000
Del. quantity cm3/: 65.00...71.00
1000s.: (62.00...74.00)
9th speed 1/min: 1250 Delivery-quant and breakaway char .: 1/min: 700 1nd speed Charge-air pressure-setting point hPa: 450 Del. quantity cm3/: (7.00...68.00 1000s.: (63.00...72.00) 2nd speed 1/min: 1400 Charge press. hPa: 1000 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) 3rd speed 1/min: 1330 ord speed 1/min: 1350
Charge press. hPa: 1000
Del. quantity cm3/: 15.00...55.00
1000S.: (15.00...55.00)
5th speed 1/min: 1300
Charge press. hPa: 1000
Del. quantity cm3/: 65.00...71.00
1000S.: (62.00...74.00)
9th speed 1/min: 1250
Charge press. hPa: 1000 1/min: 500 18th speed Del. quantity cm3/: 40.00...41.00 1000S.: (36.00...45.00) 20th speed 1/min: 500 Charge press. hPa: 1000 Del. quantity cm3/: 82.00...90.00 1000S.: (86.00...86.00) 9th speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm3/: 73.50...76.50
1000S.: (72.00...78.00)
10th speed 1/min: 1050
Charge press. hPa: 1000
Del. quantity cm3/: 78.00...81.00
1000S.: (76.50...82.50)
12th speed 1/min: 750
Charge press. hPa: 1000 Mech. shutoff: Mech. Abstellung: Charge press. hPa: 1000 Del. quyntity cm3/: 82.00...83.00 1000s.: (79 Idle delivery: 1/min: 500 18th speed Del. quantity cm3/: 40.00...41.00 1000s.: (36.00...45.00) 20th speed 1/min: 500 Charge press. hPa: 1000 Del. quantity cm3/: -4.00...4.00

Automatic starting fuel delivery:

1st speed 1/min: 200
Del. quantity cm3/: 60.00...110.00
1000S.: (60.00...110.00)

2nd speed 1/min: 370
Del. quantity cm3/: 20.00...60.00
1000s.: (20.00...60.00)

4th speed 1/min: 100 Del. quantity cm3/: 70.00...120.00 1000S.: (70.00...120.00)

Remarks:

Note inst. in remarks column

Test scheet 263 Copl. date: : 14.04.92 Edition

replaces

Calibrating oil : ISO-4113

: VE6/12F1100R402 Injection pump : 0 460 426 166 Type number

Customer Part-No. : Customer Part-No. :

Customer-specific information

Customer : CDC

: 6 BTA- 590 I Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating oil return temo.

with thermometer: 40.00...48.00 Electronically: 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 027 assembly

Openina

bar: 250.00...253.00 Pressure

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery

mm: 0.3 Prestroke

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 1.5

mm: +0.02(0.06)

Outlet : D

Injection pump setting values Test specifications in parentheses fiming-device travel

1/min: 900 Speed Charge press. hPa: 1000

Setting value mm: 4.80...5.20

Shutoff

electromagnet Volt: 24

Supply-pump pressure

1/min: 900 Speed Charge press hPa: 1000

Setting value bar: 4.70...5.30

electromagnet Volt: 24

Full-load del. with charge press.:

1/min: 750 Speed Charge press. hPa: 1000 Del. quantity cm3/ 1000s.: 71.50...72.50

Shutoff

electromagnet Volt: 24 cm3/: 4.0 Dispersion 1000s.: (4.5)

Full-load del. w/out charge press.:

1/min: 700 Speed

Del. quantity cm3/

1000s.: 51.00...52.00

electromagnet Volt: 24

Low-idle speed regulation

1/min: 400 Speed

Del. quantity cm3/

1000s.: 7.00...13.00

Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 5.5 1000s.: (7.0)

Full-load speed regulation

1/min: 1180 Speed Charge press hPa: 1000

Del. quantity cm3/

1000s.: 47.00...53.00

Shutoff

electromagnet Volt: 24

Start:

1/min: 100 Speed

Del. quantity cm3/: 65.00...115.00 mind 1000s.: 65.00

Shutoff electromagnet Volt: 24	0verflow : 55.60139.00 quantity cm3/10s: (40.60153.00)
Inspection-pump test specifications Test specifications in parentheses	Delivery-quant. and breakaway char.:
Timing-device characteristic:	1nd speed 1/min: 700*
2nd speed 1/min: 1100 Charge press hPa: 1000	+ Charge-air pressure-setting + point hPa: 350 + Shutoff
TD travel mm: 6.207.00	+ electromagnet Volt: 24
mn: (5.907.30) Shutoff	Del. quantity cm3/: 64.5065.50 1000s.: (61.0069.00)
electromagnet Volt: 24	+ 2nd speed 1/min: 1250
3rd speed 1/min: 900	+ Charge press. hPa: 1000
Charge press hPa: 1000	+ Shutoff
TD travel mm: 4.805.20	+ electromagnet Volt: 24
mm: (4.305.70)	+ Del. quantity cm3/: 0.003.00
Shutoff	10005.: (0.003.00)
electromagnet Volt: 24	+ 3rd speed 1/min: 1200
4th speed 1/min: 750	+ Charge press. hPa: 1000
Charge press hPa: 1000	+ Shutoff
TD travel mm: 3.504.30	electromagnet Volt: 24
mm: (3.204.60)	+ Del. quantity cm3/: 22.5037.50
Shutoff	1000s.: (22.5037.50)
electromagnet Volt: 24	+ 5th speed 1/min: 1180
Ol	+ Charge press. hPa: 1000 Shutoff
Supply-pump pressure characteristic:	electromagnet Volt: 24
1-t aread 1/min. 750	Del. quantity cm3/: 47.0053.00
1st speed 1/min: 750	10008: (44.0056.00)
Charge press. hPa: 1000	9th speed 1/min: 1100
Supply-pump pressure bar: 4.004.60	Charge press. hPa: 1000
Shutoff	+ Shutoff
electromagnet Volt: 24	+ electromagnet Volt: 24
2nd speed 1/min: 900	Del. quantity cm3/: 59.5062.50
Charge press. hPa: 1000	10008.: (58.0064.00)
Supply-pump	10th speed 1/min: 900
pressure bar: 4.705.30	+ Charge press. hPa: 1000
Shutoff	+ Shutoff
electromagnet Volt: 24	+ electromagnet Volt: 24
3rd speed 1/min: 1100	+ Del. quantity cm3/: 61.5064.50
Charge press. hPa: 1000	10008.: (59.5066.50)
Supply-pump	12th speed 1/min: 750
pressure bar: 5.506.10	+ Charge press. hPa: 1000
Shutoff	+ Shutoff
electromagnet Volt: 24	electromagnet Volt: 24 Del. quyntity cm3/: 71.5072.50
O control manufacture of properties and according	10008:: (69.0075.00)
Overlow quantity at overflow valve:	18th speed 1/min: 700
1st speed 1/min: 750	Charge press. hPa: -
Shutoff	+ Shutoff
electromagnet Volt: 24	electromagnet Volt: 24
Overflow : 41.7083.40	+ Del. quantity cm3/: 51.0052.00
quantity cm3/10s: (26.7098.40)	1000s.: (47.5055.50)
2nd speed 1/min: 1100	+
Charge press. hPa: 1000	<pre># Mech. shutoff:</pre>
Shutoff	+ Mech. Abstellung:
electromagnet Volt: 24	+
-	† 1st speed 1/min: 1100

Charge press. hPa: 1000 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: 24 Electr. shutoff: 1st speed 1/min: 400 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: -Idle delivery: 1/min: 400 1st speed Shutoff electromagnet Volt: 24
Del. quantity cm3/: 7.00...13.00
1000s.: (5.00...15.00)
Dispersion cm3/: 5.5 1000s.: (7.0) 1/min: 500 2nd speed Shutoff electromagnet Volt: 24 Del. quantity cm3/: 0.00...4.00 1000s.: (0.00...4.00) Automatic starting fuel delivery: 1st speed 1/min: 250 Shutoff electromagnet Volt: 24
Del. quantity cm3/: 70.00...120.00
1000s.: (70.00...120.00) 1/min: 450 2nd speed Shutoff electromagnet Volt: 24 Del. quantity cm3/: 10.00...50.00 1000s.: (10.00...50.00) 1/min: 100 4th speed Shutoff electromagnet Volt: 24 Del. quantity cm3/: 65.00...115.00 1000s.: (65.00...115.00) Shutoff electromagnet:

> : 20.0 : 24.0

mm: 5.0...5.4

Mounting and assembly dimensions:

mm: -

mm: 1.3...1.7

MS

Remarks:
Heavy-duty fuel-injection pump for 2
DI-engines: only test using timingdevice-travel measuring device with
metal jacket

\* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

H06

KF

Cut-in

min voltage

Rated voltage

Designation

Note inst. in remarks column

: CUM Test scheet

: 14.04.92 Edition : 12.07.91 replaces : ISO-4113 Calibrating oil

: VE6/12F1300R377-1 Injection pump : 0 460 426 174 Type number

Customer Part-No. :

Customer-specific information : CUMMINS Customer

: 6 BT 5.9 A Engine

KW: 217 Power 1/min: 2600 Speed

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil return temo.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250.00...253.00 Pressure

Perforated plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery

mm: 0,3 Prestroke

(from BDC): +0,02(0,04)

Start of delivery block

Piston stroke mm: 2.35

mm: +-0.02(0.06)

Outlet : D

Injection-pump setting values

H07

Test specifications in parentheses

Timing-device travel

Speed 1/min: 1200 Charge press. hPa: 1000 Setting value mm: 1.40...1.80

Shutoff

electromagnet Volt: 24

Supply-pump pressure

1/min: 1200 Speed Charge press hPa: 1000

Setting value bar: 8.10...8.70

Shutoff

electromagnet Volt: 24

Full-load del. with charge press.:

1/min: 850 Speed Charge press. hPa: 1000

Del. quantity cm3/ 1000s.: 73.50...74.50

Shutoff

electromagnet Volt: 24 cm3/: 4.0 Dispersion 1000s.: (4.5)

Full-load del. w/out charge press.:

1/min: 500 Speed Del. quantity cm3/

1000s.: 50.50...51.50

Shutoff

electromagnet Volt: 24 cm3/: 9.0 Dispersion 1000s.: (9.0)

Low-idle speed regulation

1/min: 350 Speed

Del. quantity cm3/ 1000s.: 9.00...11.00

Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 5.5 1000s.: (7.0)

Full-load speed regulation

1/min: 1400 Speed Charge press hPa: 1000

Del. quantity cm3/ 1000s.: 54.00...60.00

electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.00...140.00
mind 1000s.: 60.00 Shutoff electromagnet Volt: 24 : 111.20...194.60 Overflow cm3/10s: (96.20...209.60) quantity Shutoff electromagnet Volt: 24 Delivery-quant. and breakaway char .: Inspection pump test specifications Test specifications in parentheses 1/min: 700\* 1nd speed Charge-air pressure-setting Timing-device characteristic: hPa: 475 1/min: 1300 hPa: 1000 mm: 1.70...2.50 LDA-stroke mm: -2nd speed Shutoff Charge press electromagnet Volt: 24 Del. quantity cm3/: 63.00...64.00 1000s.: (59.50...67.50) TD travel mm: (1.40...2.80) Shutoff 1/min: 1600 2nd speed electromagnet Volt: 24 Charge press. hPa: 1000 Shucoff 1/min: 1200 3rd speed hPa: 1000 Charge press mm: 1.40...1.80 electromagnet Volt: 24 TD travel Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) mm: (0.90...2.30) Shutoff electromagnet Volt: 24 4th speed 1/min: 1100 1/min: 1480 3rd speed Charge press. hPa: 1000 Shutoff Charge press hPa: 1000 electromagnet Volt: 24
Del. quantity cm3/: 15.00...55.00
1000s.: mm: 0.40...1.20 TD travel mm: (0.10...1.50) Shutoff 1/min: 1400 electromagnet Volt: 24 5th speed Charge press. hPa: 1000 Shutoff Supply-pump pressure characteristic: electromagnet Volt: 24 Del. quantity cm3/: 54.00...60.00 1000S.: (51.00...63.00) 9th speed 1/min: 1300 1/min: 500 1st speed Charge press. hPa: 1000 Supply-pump Charge press. hPa: 1000 bar: 4.80...5.40 pressure Shutoff Shutoff electromagnet Volt: 24
Del. quantity cm3/: 66.00...69.00
1000S.: (64.50...70.50)
10th speed 1/min: 1100 electromagnet Volt: 24 1/min: 1200 2nd speed Charge press. hPa: 1000 Supply-pump Charge press. hPa: 1000 Shutoff pressure bar: 8.10...8.70 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 69.50...72.50 1000\$:: (67.50...74.50) electromagnet Volt: 24 1/min: 1300 3rd speed Charge press. hPa: 1000 1/min: 850 Supply-pump 12th speed Charge press. hPa: 1000 bar: 8.60...9.20 pressure Shutoff Shutoff electromagnet Volt: 24
Del. quyntity cm3/: 73.50...74.50
1000s.: (71.00...77.00)
18th speed 1/min: 500 electromagnet Volt: 24 Overlow quantity at overflow valve: Charge press. hPa: 1/min: 500 1st speed Shutoff Shutoff electromagnet Volt: 24 Del. quantity cm3/: 50.50...51.50 1000S.: (47.00...55.00) electromagnet Volt: 24 : 104.20...145.90 Overflow cm3/10s: (89.20...160.90) quantity 2nd speed 1/min: 1300 Charge press. hPa: 1000 1/min: 500 20th speed Charge press. hPa: 1000

Shirtoff

electromagnet Volt: 24

Del. quantity cm3/: -1000s.: (81,50...91,50)

Mech. shutoff: Mech. Abstellung:

1/min: 1300 1st speed Charge press. hPa: 1000

Del. quantity cm3/: 0.00...3.00

1000s.: (0.00...3.00)

Shutoff

electromagnet volt: 24

Electr. shutoff:

1/min: 350 1st speed

Charge press. hPa: -

Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00)

Shutoff

electromagnet volt: -

Idle delivery:

1/min: 350 1st speed

Shutoff

electromagnet Volt: 24

Del. quantity cm3/: 9.00...11.00

10**00**\$.: (5.00...15.00)

cm3/: 5.5 Dispersion

1000s.: (7.0)

1/min: 450 2nd speed

Shutoff

electromagnet Volt: 24

Del. quantity cm3/: 0.00...4.00

1000s.: (0.00...4.00)

Automatic starting fuel delivery:

1/min: 250 1st speed

Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 50.00...110.00

1000s.: (50.00...110.00)

1/min: 400 2nd speed

Shutoff

electromagnet Volt: 24

Del. quantity cm3/: 20.00...60.00

1000s.: (20.00...60.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 24

Del. quantity cm3/: 60.00...140.00

1000s.: (60.00...140.00)

Shutoff electromagnet:

H09

Cut-in

: 20.0 mir voltage

Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

mm: -K

mm: K-OT KF

mm: 1,2...1,6 MS SVS max. mm: 2,2

mm: 21,8...23,8 mm: 10,2...13.6 XL

Remarks:

: C.D.C. # 391 6987

Operate control lever after each manifold pressure compensator pressure change.

\* Correction at adjusting nut (46)

Heavy-duty fuel-injection pump for DI-engines: only test using timingdevice-travel measuring device with metal jacket

Note inst. in remarks column

Test scheet : 14.04.92 Edition

replaces Calibrating oil : ISO-4113

: VE6/12F1250R469 Injection pump : 0 460 426 198 Type number

Customer Part-No. :

Customer—specific information : IVECO-FIAT Customer

: 8060.45.4180 Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating oil return temp.

with thermometer: 40.00...48.00 Electronically: 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening |

bar: 250.00...253.00 Pressure

Perforated-plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450 x Length

Start of delivery

Indicator setting Piston stroke mm: 1.0 Outlet : A

Injection-pump setting values Test specifications in parentheses

Timing device travel

1/min: 1000 Charge press. hPa: 1000 Setting value mm: 2.20...2.60

Shutoff

electromagnet Volt: 24

Supply-pump pressure

1/min: 1000 Speed Charge press hPa: 1000

Setting value bar: 6.20...6.80

Shutoff

electromagnet Volt: 24

Full-load del. with charge press.:

1/min: 700 Speed Charge press. hPa: 1000

Del. quantity cm3/ 1000s.: 72.50...73.50

Shutoff

electromagnet Volt: 24 Dispersion cm3/: 3.5 1000s.: (5.0)

Full-load del. w/out charge press.:

1/min: 600 Speed

Del. quantity cm3/ 1000s.: 40.50...41.50

Shutoff

electromagnet Volt: 24

Low-idle speed regulation

1/min: 350 Speed

Del. quantity cm3/

1000s.: 13.00...17.00

Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 4.0 1000s.: (5.0)

Full-load speed regulation

1/min: 1400 Speed Charge press hPa: 1000

Del. quantity cm3/

1000s.: 47.00...53.00

Shutoff

electromagnet Volt: 24

Start:

1/min: 100 Speed

Del. quantity cm3/: 60.00...110.00

1000s.: 60.00 mind

Shutoff

electromagnet Volt: 24

Inspection pump test specifications Test specifications in parentheses

H10

Timing-device characteristic:	1	1nd speed 1/min: Charge-air pressure-	
3rd speed 1/min: 1000	I	point hPa:	500
Charge press hPa: 1000	1	Shutoff	<b>300</b>
TD travel mm: 2.202.60	1	electromagnet Volt:	24
mm: (1.503.30)	1	Del. quantity cm3/:	59.5060.50
Shutoff	1	10005	(56.0064.00)
electromagnet Volt: 24	1.	2nd speed 1/min:	
4th speed 1/min: 900	1	Charge press. hPa:	1000
Charge press hPa: 1000	1	Shutoff	,500
TD travel mm: 0.801.60	1	electromagnet Volt:	24
mm: (0.302.10)	1	Del. quantity cm3/:	ñ.003.00
Shutoff	1	10005	(0.003.00)
electromagnet Volt: 24	1	5th speed 1/min:	1400
5th speed 1/min: 1250	1	Charge press. hPa:	1000
Change proce hPa: 1000	Ţ	Shutoff	1000
Charge press. hPa: 1000 TD travel mm: 3.704.50	1	electromagnet Volt:	24
mn: (3.205.00)	1	Del. quantity cm3/:	47 nn 53 nn
Shutoff	Ι	1000 quarterty this?	(44.0056.00)
	Ι	8th speed 1/min:	
electromagnet Volt: 24	Ι	Charge press. hPa:	
Complement anacciona chanactaristic:	Ι	Shutoff	1000
Supply-pump pressure characteristic:	T	electromagnet Volt:	2/4
1h	T	Dol guantity cm3/:	54.00 70.00
1st speed 1/min: 600	Ī	Del. quantity cm3/:	(54.0070.00)
Charge press. hPa: 1000	†	9th speed 1/min:	1250
Supply-pump	7	Change proce bos.	1000
pressure bar: 4.004.60	1	Charge press. hPa:	1000
Shutoff	+	Shutoff	21
electromagnet Volt: 24	+	electromagnet Volt:	24 24 En - 40 En -
2nd speed 1/min: 1000	†	Del. quantity cm3/:	00.3U0Y)U
Charge press. hPa: 1000	†		(64.5071.50)
Supply-pump (20)	†	10th speed 1/min:	1000
pressure bar: 6.206.80	+	Charge press. hPa:	1000
Shutoff	†	Shutoff	21
electromagnet Volt: 24	+	electromagnet Volt:	77 FO 74 FO
3rd speed 1/min: 1250	+	Del. quantity cm3/:	01.00(1.00
Charge press. hPa: 1000	+	10005.:	(66.0073.00)
Supply-pump	+	12th speed 1/min:	/UU 4000
pressure bar: 7.708.30	†	Charge press. hPa:	1000
Shutoff	†	Shutoff	2/
electromagnet Volt: 24	+	electromagnet Volt:	24 50 77 50
	+	Del. quyntity cm3/:	(2,50(5,50
Overlow quantity at overflow valve:	+		(69.5076.50)
	+	18th speed 1/min:	
1st speed 1/min: 600	+	Charge press. hPa:	-
Charge press. hPa: 1000	+	Shutoff	21
Shutoff	+	electromagnet Volt:	<u> </u>
electromagnet Volt: 24	+	Del. quantity cm3/:	40.5041.50
Overflow : 75.06119.54	+		(37.5044.50)
quantity cm3/10s: (75.06119.54)	+	20th speed 1/min:	600
2nd speed 1/min: 1250	+	Charge press. hPa:	1000
Charge press. hPa: 1000	+	Shutoff	
Shutoff	+	electromagnet Volt:	24
electromagnet Volt: 24	+	Del. quantity cm3/:	74.5079.50
Overflow : 97.30180.70	÷	1000s.:	(72.5081.50
quantity cm3/10s: (97.30180.70)	+		
•	+	Mech. shutoff:	
Delivery-quant. and breakaway char.:	+	Mech. Abstellung:	
· · · · · · · · · · · · · · · · · · ·	1		

1/min: 1250 1st speed Charge press. hPa: 1000 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: 24 Electr. shutoff: 1/min: 350 1st speed Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: -Idle delivery: 1/min: 350 1st speed Shutoff electromagnet Volt: 24 Del. quantity cm3/: 13.00...17.00 1000s.: (10.00...20.00) Dispersion cm3/: 4.0 1000s.: (5.0) 1/min: 475 2nd speed Shutoff electromagnet Volt: 24 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Automatic starting fuel delivery: 1/min: 130 1st speed Shutoff electromagnet Volt: 24 Del. quantity cm3/: 60.00...110.00 1000s.: (60.00...110.00) 2nd speed 1/min: 250 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 20.00...50.00 1000s.: (20.00...50.00) 1/min: 100 4th speed Shutoff electromagnet Volt: 24 Del. quantity cm3/: 60.00...110.00 1000s.: (60.00...110.00) Shutoff electromagnet: Cut-in : 20.0 min voltage : 24.0 Rated voltage Mounting and assembly dimensions: Designation

mme —

K

H12

KF mm: KOT MS mm: 0.7...1.1

Remarks:

\* Correction at adjusting nut (46)

Operate control lever after each manifold—pressure compensator pressure change.

Note inst. in remarks column

Test scheet : 13.04.92 Edition

replaces

: ISO-4113 Calibrating oil

Injection pump : VE6/12F1250R419-2 : 0 460 426 199 Type number

Customer Part-No. :

Customer-specific information

Customer

: 6 BTAA 5.9 Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 109 assembly

Openina

bar: 207.00...210.00 Pressure

Perforated-plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery block Piston stroke mm: 1.25

mm: +0.02(0.06)

Outlet |

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1000 Speed Charge press. hPa: 1000 Setting value mm: 1.60...2.00

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1000 Speed Charge press hPa: 1000

Setting value bar: 6.30...6.90

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 850 Charge press. hPa: 1000

Del. quantity cm3/ 1000s.: 76.00...77.00

Shutoff

electromagnet Volt: 12 cm3/: 5.0 Dispersion 1000s.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 500

Del. quantity cm3/

1000s.: 57.50...58.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 5.0 1000s.: (6.0)

Low-idle speed regulation

1/min: 400 Speed

Del. quantity cm3/

1000s.: 8.50...12.50

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 5.5 1000S.: (7.0)

Full-load speed regulation

1/min: 1320 Speed Charge press hPa: 1000

Del. quantity cm3/ 1000s.: 68.00...74.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100 Del. quantity cm3/: 100.00...160.00

1000s.: 100.0 mind

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications

H13

Test specifications is	n parentneses	†	ist speed //min:	
		†	Charge press. hPa:	-
Timing-device charact	eristic:	+	Shutoff	40
		+	electromagnet Volt:	12
2nd speed 1/min: 1	250	+	Overflow :	41.7035.40
Charge press hPa: 1	000	+	quantity cm3/10s:	(26.7098.40)
TD travel mm: 2	2.303.10	1	2nd speed 1/min:	1250
	(2.003.40)	1	Charge press. hPa:	
	.2.005.407	Ŧ	Shutoff	1000
Shutoff	12	T		12
electromagnet Volt: 1	2000	<b>†</b>	electromagnet Volt:	16 55 (0 470 00
3rd speed 1/min: 1		+	Overflow :	33.60,139.00
Charge press hPa: 1	1000	+	quantity cm3/10s:	(40.60153.00)
TD travel mm: 1	1.602.00	+		
mm: (	(1.102.50)	+	Delivery-quant. and	breakaway char.:
Shutoff		1	, ,,,	•
electromagnet Volt: 1	12	L		
/ the man and 1/mins 9	) C	T	1nd speed 1/min:	700+
4th speed 1/min: 8	))U	T	Change on passure	-cotting
Charge press hPa: 1		†	Charge-air pressure	-Secting
TD travel mm: 0	1.801.60	+	point hPa:	
mm: (	(0.501.90)	+	LDA-stroke mm:	7.0
Shutoff		+	Shutofí	
electromagnet Volt: 1	12	1	electromagnet Volt:	12
8th speed 1/min: 4	รัก	1	Del. quantity cm3/:	64.0065.00
		T	10000	(60.5068.50)
Charge press. hPa:	2.00 7.00	T	20003	1/40
TD travel mm: 2	2.003.00	†	2nd speed 1/min:	1400
mm: (	(1.803.20)	+	Charge press. hPa:	1000
KSB/AFB		+	Shutoff	
valve Volt: 1	12	+	electromagnet Volt:	12
Shutoff	-	1	Del. quantity cm3/:	0.003.00
electromagnet Volt: 1	17	1	10005	(0.003.00)
etectronagnet vott.	16	T	3rd speed 1/min:	
		T		
Supply-pump pressure	characteristic:	+	Charge press. hPa:	1600
		+	Shutoff	
1st speed 1/min: 8	850	+	electromagnet Volt:	12
Charge press. hPa:	1000	+	Del. quantity cm3/:	15.0045.00
Supply-pump		1	1000s.:	(15.0045.00)
	5.706.30	1	5th speed 1/min:	1320
1	2.100.30	T	Charge press. hPa:	1000
Shutoff	10	T		1000
electromagnet Volt:	12	†	Shutoff	42
2nd speed 1/min: 1	1000	t	electromagnet Volt:	12
Charge press. hPa: 1	1000	+	Del. quantity cm3/:	68.0074.00
Supply-pump		+	1000s.:	(65.0077.00)
pressure bar:	6.306.90	1	9th speed 1/min:	
Shutoff		1	Charge press. hPa:	
electromagnet Volt:	10	1	Shutoff	
	12EU	Ŧ	electromagnet Volt:	12
3rd speed 1/min:		T	on manufact vott.	75 50 79 50
Charge press. hPa: '	1000	†	Del. quantity cm3/:	(7, 70,(0, 70, 70, 70, 70, 70, 70, 70, 70, 70, 7
Supply-pump		+		(74.0080.00)
pressure bar: 7	7.408.00	+	10th speed 1/min:	1150
Shutoff		+	Charge press. hPa:	1000
electromagnet Volt:	12	+	Shutoff	
4th speed 1/min:	500	1	electromagnet Volt:	12
		1	Del. quantity cm3/:	82 00 85 00
- · · · · · · · · · · · · · · · · · · ·	1000	L	1000	(80.0087.00)
Supply-pump	7.00 / 50	T	100000	950
17 1 T T T T T T T T T T T T T T T T T T	3.904.50	†	12th speed 1/min:	4000
Shutoff		+	Charge press. hPa:	(UUU
electromagnet Volt:	12	+	Shutoff	
-		+	electromagnet Volt:	12
Overlow quantity at	overflow valve:	+	Del. quyntity cm3/:	76.0077.00
STO, CON Quality of	C. C. I SCIT TO STW 5	$\perp$	10005	(73.5079.50)

1/min: 500 18th speed Charge press. hPa: -Shutoff electromagnet Volt: 12 Del. quantity cm3/: 58.50...59.50 1000s.: (55.00...63.00) 20th speed 1/min: 500 Charge press. hPa: 1000 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 78.00...86.00 1000s.: (78.00...86.00) Mech. shutoff: Mech. Abstellung: 1/min: 1250 1st speed Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: 12 Electr. shutoff: 1st speed 1/min: 400 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: -Idle delivery: 1/min: 400 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.50...12.50 1000s.: (5.50...15.50) Dispersion cm3/: 5.5 1000s.: (7.0) 1/min: 470 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Automatic starting fuel delivery: 1st speed 1/min: 130 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 110.00...170.00 1000s.: (110.00...170.00) 1/min: 250 2nd speed

electromagnet Volt: 12 Del. quantity cm3/: 50.00...80.00 1000s.: (50.00...80.00)

1/min: 100

Shutoff Cut-in Designation Κř MS LDA stroke Remarks: change.

electromagnet Volt: 12 Del. quantity cm3/: 100.00...160.00 1000s.: (100,00...160.00) Shutoff electromagnet: min voltage Rated voltage : 10.0 : 12.0 Mounting and assembly dimensions:

mm: 3.6...3.8 nm: KOT mm: 0.8...1.0 mm: 7.0

: c.b.c. # 392 1613

\* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure

Heavy-duty fuel-injection pump for DI-engines: only test using timingdevice-travel measuring device with metal jacket

H15

Shutoff

4th speed

Note inst. in remarks column

Test scheet

: 13.04.92 Edition

replaces

: ISO-4113 Calibrating oil

: VE6/12F11COR371-2 Injection pump : 0 460 426 201

Type number Customer Part-No. :

Customer-specific information : CASE

Customer

: 6 T 590 Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer : 40.00...48.00

Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening |

bar: 250.00...253.00 Pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery block Piston stroke mm: 1.5

mm: +-0.02(0.06)

Outlet : D

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 700 Speed

Setting value mm: 1.30...1.70

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 700 Speed

Setting value bar: 4.70...5.30

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 700 Speed

Del. quantity cm3/

1000s.: 76.00...77.00

Shutoff

electromagnet Volt: 12 cm3/: 4.0 Dispersion

1000s.: (4.5)

Low-idle speed regulation

1/min: 450 Speed

Del. quantity cm3/

1000s.: 8.00...12.00

Shutoff

alectromagnet Volt: 12 Del. quantity cm3/: 5.5 1000s.: (7.0)

Full-load speed regulation

1/min: 1160

Del. quantity cm3/ 1000s.: 45.00...51.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 80.00...120.00

1000s.: 80.00 mind

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 1100 2nd speed

mm: 3.90...4.70 TD travel

mm: (3.60...5.00)

Shutoff

electromagnet Volt: 12 1/min: 700 3rd speed

mm: 1.30...1.70 TD travel

mm: (0.80...2.20)

Shutoff +	Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
4th speed 1/min: 500	Del. quantity cm3/: 65.5068.50
	1000s.: (64.0070.00)
	12th speed 1/min: 700
mn: (0.001.00)	
Shutoff +	Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
+	Del. quyntity cm3/: 76.0077.00
Supply-pump pressure characteristic:	1000S.: (74.5078.50)
+	20th speed 1/min: 500
1st speed 1/min: 500	Shutoff
	electromagnet Volt: 12
Supply-pump + pressure bar: 3.804.40 +	Del. quantity cm3/: 68.0076.00
Transfer of the control of the contr	1000s.: (66.0078.00)
Shutoff	10005.: (00.00/0.00/
electromagnet Volt: 12	44 . J J 4 - 55
2nd speed 1/min: 700 +	Mech. shutoff:
Supply-pump +	
pressure bar: 4.705.30 +	Electr. shutoff:
Shutoff	
electromagnet Volt: 12	1st speed 1/min: 450
3rd speed 1/min: 1100 +	Del. quantity cm3/: 0.003.00
Supply-pump +	19038.: (0.003.00)
	Shutoff
Shutoff	electromagnet volt: -
electromagnet Volt: 12 +	- 11
<b>†</b>	Idle delivery:
Overlow quantity at overflow valve: +	
+	1st speed 1/min: 450
1st speed 1/min: 500 +	Shutoff
Shutoff	electromagnet Volt: 12
electromagnet Volt: 12	Del. quantity cm3/: 8.0012.00
	1000s.: (5.0015.00)
Overflow : 41.7083.40 +	Dispersion cm3/: 5.5
quantity cm3/10s: (26.7098.40)	
2nd speed 1/min: 1100	1000s.: (7.0)
Shutoff	2nd speed 1/min: 550
electromagnet Volt: 12	Shutoff
Overflow : 55.60139.00 +	electromagnet Volt: 12
quantity cm3/10s: (40.60153.00)	Del. quantity cm3/: 0.003.00
	10008.: (0.003.00)
Delivery-quant. and breakaway char.:	
becare, diane, and predicted of the fit	Automatic starting fuel delivery:
	Advance state ing race decivery.
2nd speed 1/min: 1230	1st speed 1/min: 180
Shutoff	Shuroff 12
electromagnet Volt: 12	electromagnet Volt: 12
Del. quantity cm3/: 0.003.00 +	Del. quantity cm3/: 80.00140.00
10008.: (0.003.00)	1000s.: (80.00140.00)
3rd speed 1/min: 1190 +	
Shutoff	2nd speed 1/min: 350
electromagnet Volt: 12	Shutoff
Del. quantity cm3/: 10.0030.00	electromagnet Volt: 12
10005.: (10.0030.00)	Del. quantity cm3/: 40.0080.00
	10005:: (40.0080.00)
Shutoff +	(0003 (40.0000.00)
electromagnet Volt: 12	/ th
5th speed 1/min: 1160 +	4th speed 1/min: 100
Shutoff	Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
Del. quantity cm3/: 45.0051.00	Del. quantity cm3/: 80.00120.00
10005.: (42.0054.00)	1000s.: (80.00120.00)
9th speed 1/min: 1100	
/ CEL SPOCK TIMELIN TOO	

### Shutoff electromagnet:

Cut-in

: 10.0 : 12.0 min voltage Rated voltage

### Mounting and assembly dimensions:

Designation

K

mm: -mm: 5.0...5.4 mm: 0.8...1.2 KF MS

Remarks: Heavy-duty fuel-injection pump for 06 DI-engines: only test using timing-device-travel measuring device with metal jacket

Note inst. in remarks column

Test scheet : 14.04.92 Edition : 18.02.91 replaces : ISO-4113 Calibrating oil

: VE4/8F2400R348 Injection pump : 0 460 484 027 Type number

Customer Part-No. :

Customer—specific information

Customer : W

: 086-1.61 Engine

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer : 40.00...48.00 : 42.00...50.00 Electronically

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Openina

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery Prestroke mm: -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1250 Speed

Setting value mm: 3.10...3.50

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1250 Speed

H19

Setting value bar: 5.00...5.60

Shutof?

electromagnet Volt: 12

Full-load del. with charge press .:

1/min: 1250 Speed

Del. quantity cm3/ 1000s.: 31.30...32.30

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2.0 1000s.: (3.0)

Low-idle speed regulation

1/min: 425 Speed

Del. quantity cm3/

1000s.: 7.00...9.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 2.0 1000s.: (3.0)

Residual-Delivery Setting

1/min: 550 Speed

Del. quantity cm3/ 1000s.: 3.50...4.50

Shutoff

electromagnet Volt: 12

Full-load speed regulation

1/min: 2650 Speed

Del. quantity cm3/ 1000s.: 12.00...16.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 35.00...85.00 mind 1000s.: 35.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Ini.-aty.dif.measurement:

Speed 1/min: 1250

Inj.-qty. cm3/

difference 1000S.: 5.00...11.00 \*

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV)

1/min: 1250 1. Speed

2nd speed Shutoff 1/min: 2800 TD-travel difference mm:  $0.60...0.80 \times$ electromagnet Volt: 12
Del. quantity cm3/: 0.00...6.00
1000S.: (0.00...6.00)
5th speed 1/min: 2650 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses 5th speed Shutoff Timing-device characteristic: 1/min: 2250 mm: 7.30...8.10 mm: (7.00...8.40) 8th speed Shutoff 2nd speed TD travel Shutoff electromagnet Volt: 12 3rd speed 1/min: 1250 mm: 3.10...3.50 ma: (2.60...4.00) Shutoff TD travel Shutoff electromagnet Volt: 12 4th speed 1/min: 750 12th speed Shutoff mm: 1.10...1.90 TD travel electromagnet Volt: 12
Del. quyntity cm3/: 31.30...32.30
1000s.: (29.60...34.00) mm: (0.80...2.20) Shutoff electromagnet Volt: 12 20th speed 1/min: 600 Supply-pump pressure characteristic: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 23.00...26.00 1000s.: (21.50...27.50) 1/min: 600 1st speed Supply-pump Charge press. hPa: 400 Shutoff bar: 3.40...4.00 pressure Shutoff electromagnet Volt: 12.0 Dal. quantity cm3/: 24,0...30.0 1000s.: (21.0...33.0) electromagnet Volt: 12 2rd speed 1/min: 1250 Supply-pump bar: 5.00...5.60 pressure Mech. shutoff: Shutoff electromagnet Volt: 12 3rd speed 1/min: 2250 Electr. shutoff: 3rd speed Supply-pump 1/min: 425 bar: 7.30...7.90 1st speed pressure Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet Volt: 12 Shutoff electromagnet volt: -Overlow quantity at overflow valve: 1/min: 600 Damper set qty.: 1st speed Shutoff LFG-setting: electromagnet Volt: 12 : 41.70...83.40 solidale con carcassa: Overflow cm3/10s: (27.80...97.30) 1/min: 2250 Idle delivery: quantity 2nd speed 1/min: 425 Shutoff 1st speed electromagnet Volt: 12 Overflow : 55.60...138.90 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 7.00...9.00 1000S.: (4.00...12.00) cm3/10s: (41.70...152.90) quantity 1/min: 400 2nd speed Delivery-quant. and breakaway char.: Shutoff electromagnet Volt: 12

Del. quantity cm3/: 8.50...11.50 1000s.: (6.00...14.00)

High Idle:

1st speed 1/mi: 525

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 7.00...9.00 1000s.: (4.00...12.00)

Residual:

1/min: 550 1.Rotacao

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 3.50...4.50 1900s.: (2.00...6.00)

1/min: 500 2nd speed

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 5.00...7.00 1000s.: (3.50...8.50)

Load-dependent start of delivery: Inj.-qty.dif.measurement:

1/min: 1250 3rd speed

cm3/: + 0.0...3.0 #Inj.-qty.

difference 1000s.: -

Shutoff

electromagnet Volt: 12

TD-travel dif.measurement:

correttore anticipo iniezione (SV):

1st speed 1/min: 1250

: 1.30...1.70 # TD-travel

mm: difference

Shutoff

electromagnet Volt: 12 3rd speed 1/min: 1250

3rd speed

Supply pump-

: 0.90...1.30 # pressure

bar: (0.70...1.50) difference

Shutoff

electromagnet Volt: 12

Automatic starting fuel delivery:

1/min: 180 1st speed

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 35.00...85.00 1000s.: (35.00...85.00)

1/min: 380 2nd speed

Shutoff

H21

electromagnet Volt: 12 Del. quantity cm3/: 15.00...35.00 1000s.: (15.00...35.00)

1/min: 100 4th speed

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 35.00...85.00 1000s.: (35.00...85.00)

Shurtoff electromagnet:

Cut-in

min voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

mm: 3,2...3,4 mm: 5,3...5.7 K KF MS mm: 1,4...1.6

Remarks:

On initial measurement, screw in residual-quantity adjusting screw 2 mm.

Following pump adjustment, screw out residual-quantity adjusting screw 2 mm.

Note inst. in remarks column

Fest scheet : VWW 1.4 A : 13.04.92 Edition : 02.12.91 replaces : ISO-4113 Calibrating oil

: VE4/8F2450L331-2 Injection pump : 0 460 484 033 Type number

Customer Part-No. :

Customer-specific information

Customer : VW

: 031.2 Engine

kw: 35.0 Power

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening |

bar: 147.00...150.00 Pressure

Test ini. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery Prestroke mm: -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1600 Speed

Setting value mm: 3.60...4.00

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1600 Speed

Setting value bar: 5.90...6.50

Shutoff

electromagnet Volt: 12

Full-Load del. w/out charge press.:

1/min: 1500

Del. quantity cm3/ 1000s.: 24.30...25.30

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2.0 1000s.: (3.0)

Residual-Delivery Setting

1/min: 575 Speed

Del. quantity cm3/

1000s.: 2.50...3.50

Shutoff

electromagnet Volt: 12

Full-load speed regulation

1/min: 2700 Speed

Del. quantity cm3/

1000s.: 10.00...14.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 32.00...82.00 mind 1000s.: 32.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Ini.-qty.dif.measurement:

1/min: 1250 Speed

cm3/Inj.-qty.

difference 1000S.: 5.50...11.50

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV)

1/min: 1250 1.Speed

TD-travel

mm: 0.60...0.80 difference

Shutoff

electromagnet Volt: 12 SP press. dif.measurement pompa di mandata (FP) 1/min: 1250 1.Speed

Supply pump pressure	+ 3rd speed 1/min: 2975 - Shutoff
difference bar: 0.801.20	+ electromagnet Volt: 12
Shutoff	Del. quantity cm3/: 0.006.00
	10005: (0.006.00)
electromagnet Volt: 12	
The state of the s	
Inspection pump test specifications	+ Shutoff
Test specifications in parentheses	+ electromagnet Volt: 12
	+ Del. quantity cm3/: 10.0014.00
Timing-device characteristic:	1000s.: (8.0016.00)
	+ 8th speed 1/min: 2575
1st speed 1/min: 1600	+ Shutoff
TD *ravel mm: 3.604.00	+ electromagnet Volt: 12
mm: (3.104.50)	+ Del. quantity cm3/: 15.5025.50
@lectromagnet Volt: 12	1000s.: (14.5026.50)
2nd speed 1/min: 2250	9th speed 1/min: 2250
2nd speed 1/min: 2250	+ Shutoff
TD travel mm: 6.407.20	
mm: (6.107.50)	+ electromagnet Volt: 12
Shutoff	+ Del. quantity cm3/: 22.5024.50
electromagnet Volt: 12	1000s.: (21.3025.70)
4th speed 1/min: 1000	+ 10th speed 1/min: 600
TD travel mm: 0.601.40	+ Shutoff
mm: (0.301.70)	+ electromagnet Volt: 12
Shutoff	+ Del. quantity cm3/: 17.0022.00
electromagnet Volt: 12	1000s.: (14.5024.50)
etettrollagret vott. 12	+ 12th speed 1/min: 1500
0	+ Shutoff
Supply-pump pressure characteristic:	
	+ electromagnet Volt: 12
1st speed 1/min: 800	+ Del. quyntity cm3/: 24.3025.30
Supply-pump	1000s.: (21.8927.89)
pressure bar: 3.604.20	+ 20th speed` 1/min: 800
Shutoff	+ Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
2nd speed 1/min: 1600	+ Del. quantity cm3/: 20.5023.50
Supply-pump	1000s.: (19.0025.00)
	1
	Mech. shutoff:
Shutoff	T recin. Silutori.
electromagnet Volt: 12	T Floren showere.
3rd speed 1/min: 2250	+ Electr. shutoff:
Supply-pump	† 4. 455
pressure bar: 7.708.30	1st speed 1/min: 450
Shutoff	<pre>bel. quantity cm3/: 0.003.00</pre>
electromagnet Volt: 12	1000s.: (0.003.00)
•	+ Shutoff
Overlow quantity at overflow valve:	+ electromagnet volt: -
and the desire of the contract	
1st speed 1/min: 800	+ Damper set qty.:
Shutoff	1
	LFG-setting:
electromagnet Volt: 12	solidale con carcassa:
Overflow : 41.7083.40	
quantity cm3/10s: (26.8098.30)	Idle delivery:
2nd speed 1/min: 2250	1 4
Shutoff	1st speed 1/min: 425
electromagnet Volt: 12	+ Shutoff
Overflow : 55.60138.00	+ electromagnet Volt: 12
quantity cm3/10s: (40.70153.90)	+ Del. guantity cm3/: 9.5011.50
• • • • • • • • • • • • • • • • • • • •	+ 1000s.: (6.5014.50)
Delivery-quant. and breakaway char.:	+ 2nd speed 1/min: 450
APPLIANTE MANUEL MIN ME PROMISED FROM 19	+ Shutoff
	F electromagnet Volt: 12
	T erectionalier voter is

Del. quantity cm3/: 5.50...8.50 1000s.: (3.00...11.00)

cm3/: 2.0 Dispersion 1000s.: (3.0)

Residual:

1/min: 575 1.Rotacao

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 2.50...3.50 1000s.: (1.00...5.00)

1/min: 525 2nd speed

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.00...5.00 1000s.: (1.50...6.50)

Load-dependent start of delivery: Inj.-qty.dif.measurement:

1st speed 1/min: 1250 Inj.-qty. cm3/ : 5.50...11.50 difference 1000S:: (4.50...12.50)

Shurcoff

electromagnet Volt: 12

TD-travel dif.measurement:

correttore anticipo iniezione (SV):

1st speed 1/min: 1250

: 0.60...0.80 TD-travel difference mm: (0.60...0.80)

Shutoff

electromagnet Volt: 12

SP press.-dif.measurement: pompa di mandata (FP):

1st speed 1/min: 1250

Supply pump-

: 0.80...1.20 pressure bar: (0.60...1.40) difference

Shutoff

electromagnet Volt: 12

Automatic starting fuel delivery:

1/min: 200 1st speed

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 30.00...80.00 1000s.: (30.00...80.00)

1/min: 400 2nd speed

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 10.00...30.00 1000s.: (10.00...30.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 32.00...82.00

1000s.: (32.00...82.00)

Shutoff electromagnet:

Cut-in

: 10.0 min voltage Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

mm: 3.2...3.4 mm: 5.6...6.0 mm: 1.2...1.6 ΚF MS

Remarks:

Overflow restriction 0.55 mm - Part No.

..303

Note inst. in remarks column

Test scheet : VWW 1.9 C1 : 14.10.91 Edition

replaces

Calibrating oil : ISC-4113

: VE4/8F1500R401 Injection pump : 0 460 484 036 Type number

Customer Part-No. :

Customer-specific information

Customer

: 028.B 1.9L. Engine

KW: 38 Power

TEST BENCH REQUIREMENTS

Calibrating-oil return temb.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Openina

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery

Prestroke nm: 1.0

(from BDC): +-0.02(0.04)

Injection pump setting values Test specifications in parentheses

Timing device travel

1/min: 1400 Speed

Setting value mm: 4.00...4.40

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1400 Speed

Setting value bar: 5.80...6.40

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1400 Speed

Del. quantity cm3/

1000s.: 34.50...35.50

Shutoff

electromagnet Volt: 12 cm3/: 2.0 Dispersion 1000s.: (3.0)

Low-idle speed regulation

1/min: 430 Speed

Del. quantity cm3/ 1000s.: 6.00...10.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 2.0 1000S.: (3.0)

Start:

1/min: 100 Speed

Del. quantity cm3/: 35.00...55.00 mind 1900s.: 35.00

mind

Shutoff

electromagnet Volt: 12

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 1400 3rd speed

mm: 4.00...4.40 TD travel mm: (3.50...4.90)

Shutoff

electromagnet Volt: 12

1/min: 750 4th speed

mm: 1.60...2.40 mm: (1.30...2.70) TD travel

Shutoff

electromagnet Volt: 12

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 3.70...4.30 pressure

bar: (3.50...4.50)

Shutoff

electromagnet Volt: 12 2nd speed 1/min: 1400 Supply-pump bar: 5.80...6.40 pressure bar: (5.60...6.60) Electr. shutoff: Shutoff 1/min: 430 1st speed electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Overlow quantity at overflow valve: Shutoff electromagnet volt: -1/min: 500 1st speed Shutoff Idle delivery: electromagnet Volt: 12 : 41.70...83.40 Overflow 1/min: 430 cm3/10s: (27.80...97.30) 1st speed quantity Shutoff 1/min: 1400 2nd speed electromagnet Volt: 12 Shutoff Del. quantity cm3/: 6.00...10.00 electromagnet Volt: 12 : 55.60...138.90 cm3/10s: (41.70...152.90) 1000s.: (4.00...12.00) Overflow cm3/: 2.0 1000s.: (3.0) 1/min: 550 quantity Dispersion Shutoff 2nd speed electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Delivery quant. and breakaway char.: Del. quantity cm3/: 0.00...4.00 1000s.: (0.00...4.00) 1/min: 1600 2nd speed Shutoff Automatic starting fuel delivery: electromagnet Volt: 12 Del. quantity cm3/: 0.00...6.00 1st speed Shutoff 1/min: 180 1000s.: (0.00...6.00) electromagnet Volt: 12 Dal. quantity cm3/: 30.00...64.00 1000s.: (30.00...64.00) 1/min: 1570 4th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...6.00 1000s.: (0.00...12.00) 5th speed 1/min: 1550 1/min: 380 2nd speed Shutoff 5th speed electromagnet Volt: 12 Del. quantity cm3/: 10.00...30.00 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.50...12.00 1000s.: (1.50...22.50) 1000s.: (10.00...30.00) 1/min: 100 4th speed 1/min: 1530 6th speed Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 16.50...28.50 1000s.: (12.00...33.00) electromagnet Volt: 12 Del. quantity cm3/: 35.00...55.00 1000s.: (35.00...55.00) 1/min: 1510 7th speed Shutoff electromagnet: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 27.00...39.00 Cut-in 1000s.: (22.50...43.50) 1/min: 1400 : 10.0 min voltage : 12.0 Rated voltage 12th speed Shutoff Mounting and assembly dimensions: Designation mm: 3.2...3.4 mm: 5.2...5.6 K KF Shutoff electromagnet Volt: 12 Del. quantity cm3/: 25.20...28.20 1000S.: (23.70...29.70) mm: 1.1...1.5 MS mm: 17.0...19.0 XK mm: 11.8...15.2 XL

Mech. shutoff:

Remarks:

Note inst. in remarks column

: REN 2,0 P4 Test scheet : 14.04.92 Edition : 18.02.91 replaces Calibrating oil : ISO-4113

Injection pump : VE4/8F2300R317-3 : 0 460 484 041 Type number

Customer Part-No. :

Customer-specific information Customer : RNUR

: F8Q - 742 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer: 40.00...48.00 Electronically: 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-ho'zer assembly : 1 688 901 022

Openina

bar: 130.00...133.00 Pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450 x Length

Start of delivery Prestroke mm: -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1250 Speed Setting value mm: 4.10...4.50

Shutoff electromagnet Volt: 12

Supply-pump pressure

1/min: 1250 Speed

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Setting value bar: 4.50...5.10

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1250

Del. quantity cm3/

1000s.: 31.00...32.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2.5 1000s.: (3.0)

Low-idle speed regulation

Speed 1/min: 410

Del. quantity cm3/

1000s.: 6,5...10,5

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 2,5 1000s.: (3,0)

Residual-Delivery Setting

1/min: 500 Speed Speed Del. quantity cm3/ 1000s.: 1.00...5.00

Shutoff

electromagnet Volt: 12

Full-load speed regulation

1/min: 2450 Speed

Del. quantity cm3/ 1000s.: 22.00...28.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100

Pel. quantity cm3/: 40.00...70.00
mind 1000s.: 40.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery: Inj.-qty.dif.measurement:

1/min: 1250 Speed

cm3/

Inj.-qty. cm3/ difference 1000s.: 9.00...13.00

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV)

1.Speed 1/min: 1250

TD-travel	† 1st speed 1/min: 750
difference mm: 0.300.50	+ Shutoff
Shutoff	electromagnet Volt: 12 Overflow: 41.7083.40
electromagnet Volt: 12	+ quantity cm3/10s: (26.7098.40)
Inspection-pump test specifications	2nd speed 1/min: 2250
Test specifications in parentheses	Shutoff
rest specificacións in pareneneses	+ electromagnet Volt: 12
Timing-device characteristic:	+ Overflow : 55.60139.00
Thirting action conditions to the control of the co	+ quantity cm3/10s: (40.60153.00)
2nd speed 1/min: 2000	+
TD travel mm: 7.408.20	+ Delivery-quant. and breakaway char.:
mm: (7.108.50)	†
Shutoff	1 2nd mand 1/min 2050
electromagnet Volt: 12	2nd speed 1/min: 2950
3rd speed 1/min: 1250 TD travel mm: 4.104.50	- Shutoff electromagnet Volt: 12
TD travel mm: 4.104.50 mm: (3.605.00)	Del. quantity cm3/: 0.005.00
Shutoff	10008: (0.005.00)
electromagnet Volt: 12	+ 3rd speed 1/min: 2650
4th speed 1/min: 750	Shutoff
TD travel mm: 1.702.50	electromagnet Volt: 12 Del. quantity cm3/: 7.0015.00
mm: (1.402.80)	+ Del. quantity cm3/: 7.0015.00
Shutoff	+ 1000S.: (6.0016.00)
electromagnet Volt: 12	+ 5th speed 1/min: 2450
8th speed 1/min: 500	+ Shutoff
TD travel mm: 1.904.30 B	+ electromagnet Volt: 12
mm: (1.904.30)	bel. quantity cm3/: 22.0028.00
KSB/AFB	1000s.: (21.0029.00)
valve Volt: 12	+ 9th speed 1/min: 2250 + Shutoff
Shutoff	+ electromagnet Volt: 12
electromagnet Volt: 12 9th speed 1/min: 310	Del. quantity cm3/: 31.5033.50
TD travel mm: 0.603.00 A	10008:: (30.2034.80)
mm: (0.603.00)	+ 10th speed 1/min: 2000
KSB/AFB	Shutoff
valve Volt: 12	+ electromagnet Volt: 12
Shutoff	<pre>Del. quantity cm3/: 30.3032.30</pre>
electromagnet Volt: 12	1000\$.: (29.0033.60)
	11th speed 1/min: 1625
Supply-pump pressure characteristic:	+ Shutoff
4 4 4 750	+ electromagnet Volt: 12
1st speed 1/min: 750	Del. quantity cm3/: 29.7032.70 1000s.: (28.9033.50)
Supply-pump pressure bar: 3.103.70	12th speed 1/min: 1250
pressure bar: 3.103.70 Shutoff	+ Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
2nd speed 1/min: 1250	+ Del. quyntity cm3/: 31.0032.00
Supply-pump	10008.: (29.2033.80)
pressure bar: 4.505.10	+ 20th speed 1/min: 750
Shutoff	+ Shutoff
electromagnet Volt: 12	+ electromagnet Volt: 12
3rd speed 1/min: 2000	Del. quantity cm3/: 30.1033.10
Supply-pump	1000s.: (29.3033.90)
pressure bar: 6.407.00	# Mech. shutoff:
Shutoff	T mech. shutori:
electromagnet Volt: 12	‡ Electr. shutoff:
Overlow quantity at overflow valve:	T Lectif . Shutoff .
OVER COM MODIFIED OF OVER LOW AGENCY	1st speed 1/min: 410
	· · · · · · · · · · · · · · · · · · ·

: 0.10...0.50 ' TD-travel Del. quantity cm3/: 0.00...3.00 mm: (0.00...0.60)difference 1000s.: (0.00...3.00) Shutoff Shutoff electromagnet Volt: 12 electromagnet volt: -SP press.-dif.measurement: Damper set qty.: pompa di mandata (FP): 1st speed 1/min: 1250 LFG-setting: Supply pumpsolidale con carcassa: : 0.10...0.30 \* Idle delivery: pressure bar: (0.10...0.30) difference 1/min: 410 Shutoff 1st speed electromagnet Volt: 12 Shutoff 3rd speed 1/min: 1250 electromagnet Volt: 12 Del. quantity cm3/: 6.50...10.50 10COS.: (4.50...12.50) Supply pump-. 0.20...0.60 pressure bar: (0.20...0.60) difference Shutoff High Idle: electromagnet Volt: 12 1/mi: 500 1st speed Automatic starting fuel delivery: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 7.00...11.00 1000S.: (5.00...13.00) 1/min: 210 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 45.00...75.00 Residual: 1000s.: (45.00...75.00) 1/min: 500 1.Rotacao 1/min: 310 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 1.00...5.00 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 15.00...45.00 1000s.: (15.00...45.00) 1000s.: (1.00...5.00) Load-dependent start of delivery: 1/min: 100 4th speed Inj.—qty.dif.measurement: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40.00...70.00 1000s.: (40.00...70.00) difference 1000S.: -Shutoff Shutoff electromagnet: electromagnet Volt: 12 3rd speed 1/min: 1250
Inj.—qty. cm3/: 9.00...13.00# Cut-in Inj.—qty. difference 1000S.: min voltage : 10.0 : 12.0 Rated voltage Shutoff electromagnet Volt: 12 Mounting and assembly dimensions: 1/min: 1250 5th speed cm3/: +2.00...8.00' Inj.—qty. difference 1000s.: -Designation mm: 3,2...3,4 mm: 5,3...5,7 mm: 1,1...1,5 mm: 2,7 Shutoff KF electromagnet Volt: 12 MS SVS max. TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1250 Remarks: TD-travel : 0.30...0.50 # mm: (0.30...0.50) Operate control lever after each difference manifold-pressure compensator pressure Shutoff electromagnet Volt: 12 change. 3rd speed 1/min: 1250

\* Correction at adjusting nut (46)

A = KSB adjustment point B = KSB curve point

J03

Note inst. in remarks column

Test scheet

Edition : 10.04.92

replaces

Calibrating oil : ISO-4113

Injection pump : VE4/8F2300R463 : 0 460 484 051 Type number

Customer Part-No. :

Customer-specific information : FIAT-AUTO Customer

: M708 BA/FA Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening

bar: 130.00...133.00 Pressure

Test ini. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450 x Length

Start of delivery

Indicator setting Piston stroke mm: 1.0 Outlet. : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1500 Speed

Setting value mm: 5.10...5.50

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1500

Setting value bar: 5.30...5.90

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 1500

Del. quantity cm3/ 1000s.: 28.30...29.30

Shutoff

electromagnet Volt: 12 Dispersion cm3/: (2.5) 1000s.: (3.0)

Low-idle speed regulation

1/min: 400 Speed

Del. quantity cm3/

1000s.: 10.00...14.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 2.5 1000s.: (3.0)

Full-load speed regulation

1/min: 2500 Speed

Del. quantity cm3/

1000s.: 17.00...23.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100 Del. quantity cm3/: 37.00...63.00 mind 1000S.: 37.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1500 Speed Charge press hPa: 12 cm3/ Inj.—qty.

difference 1000S.: 7.00...13.00

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV)

1/min: 1500 1.Speed

TD-travel

difference mm: 0.70...0.90

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 0.00...1.60 1000S.: (0.00...1.60) 3rd speed 1/min: 2700 Inspection pump test specifications Test specifications in parentheses 3rd speed Shutoff Timing-device characteristic: electromagnet Volt: 12
Del. quantity cm3/: 1.00...9.00
1000S:: (0.00...19.00)
5th speed 1/min: 2500 1/min: 2300 1st speed mm: 8.60...9.40 TD travel mm: (8.30...9.70) Shutoff electromagnet Volt: 12
Del. quantity cm3/: 17.00...23.00
1090S.: (14.00...26.00)
9th speed 1/min: 2300 9th speed Shutoff Shutoff electromagnet Volt: 12 3rd speed 1/min: 800 electromagnet Volt: 12 Del. quantity cm3/: 29.40...31.80 1000s.: (28.20...33.10) mm: 1.60...2.40 TD travel mm: (1.10...2.90) 10th speed 1/min: 1000 Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 28.30...30.70 1000s.: (27.20...31.80) Supply-pump pressure characteristic: 1/min: 600 1/min: 2300 12th speed 1st speed Shutoff Supply-pump electromagnet Volt: 12 Del. quyntity cm3/: 28.30...31.30 1000s.: (26.30...33.30) bar: 7.40...8.00 pressure Shutoff electromagnet Volt: 12 2nd speed 1/min: 1500 2nd speed Mech. shutoff: Supply-pump bar: 5.30...5.90 pressure Electr. shutoff: Shutoff electromagnet Volt: 12 3rd speed 1/min: 600 1st speed 1/min: 400 3rd speed Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Supply-pump bar: 3.10...3.70 pressure Shutoff Overlow quantity at overflow valve: electromagnet volt: -1st speed Shutoff Idle delivery: 1/min: 600 1st speed 1/min: 400 electromagnet Volt: 12 : 41.00...83.00 Shutoff Overflow electromagnet Volt: 12
Del. quantity cm3/: 10.00...14.00
1000s.: (7.00...17.00)
Dispersion cm3/: 2.5
1000s.: (3.0)
2nd speed 1/min: 450 cm3/10s: (26.00...98.00) 1/min: 2300 quantity 2nd speed Shutoff electromagnet Volt: 12 Overflow : 55.00...139.00 cm3/10s: (40.00...153.00) quantity Shutoff Delivery-quant. and breakaway char.: 1/min: 1500 4th speed 1nd speed Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...2.50 1000s.: (0.00...2.50) 2nd speed Load-dependent start of delivery: Shutoff Inj.-qty.dif.measurement: electromagnet Volt: 12

mm: 1.6...2.0 MS 1/min: 1500 1st speed 1/min: 1500 Remarks: 2nd speed 1/min: 1500 3rd speed cm3/: 6.00...12.00 Inj.-qty. difference 1000S.: (6.00...12.00) Shutoff electromagnet Volt: 12 4th speed 1/min: 1500 5th speed 1/min: 1500 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1500 TD-travel : 0.70...0.90 mm: (0.70...0.90)difference Shutoff electromagnet Volt: 12 2nd speed 1/min: 1500 1/min: 1500 3rd speed 1/min: 1500 4th speed SP press.—dif.measurement: pompa di mandata (FP): 1/min: 1500 1/min: 1500 1st speed 2nd speed 1/min: 1500 3rd speed 1/min: 1500 4th speed Automatic starting fuel delivery: 1/min: 300 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 48.00...74.00 1000S.: (48.00...74.00) 2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 35.00...45.00 1000S.: (35.00...45.00) 1/min: 100 4th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 55.00...81.00 1000s.: (55.00...81.00) Shutoff electromagnet: Cut-in min voltage : 10.0 : 12 Rated voltage Mounting and assembly dimensions: Designation mm: 3.2...3.4 mm: 5.3...5.7 KF

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Note inst. in remarks column

Test scheet : FIA 1,9 K2 : 06.12.91 Edition

replaces

Calibrating oil : ISO 4113

: VE4/8F2300R464 Injection pump : 0 460 484 052 Type number

Customer-specific information

: FIAT TIPO/TEMPRA Customer

: M 705 Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil °C

with thermometer : 40.00...48.00 : 42.00...50.00 Electronically

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 027 assembly

Openina .

bar: 130.00...133.00 Pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mn: 450 x Length

Start of delivery Prestroke mm: -(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1500 Speed Setting value mm: 5,9...6,3

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1500 Setting value bar: 5,5...6,1 Shutoff electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 1500 Speed

Del. quantity cm3/

1000s.: 30,5...31,5

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2.5

1000s.: -

Low-idle speed regulation

1/min: 390 Speed Del. quantity cm3/

1**000**s.: 8,0...12,0

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 2,5 1000s.: -

Full-load speed regulation

1/min: 2500 Speed

Del. quantity cm3/

1000s.: 20,0...26,0

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed Del. quantity cm3/: -1000s.: 37,0

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Ini.-gty.dif.measurement:

1/min: 1500 Speed

Inj.-qty. cm3/

difference 1000s.: 6,0...12,0

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV)

1/min: 1500 1.Speed

TD-travel

mm: 1,0...1,2 \* difference

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

J07

St speed   1/min: 800   Shutoff				
To travel	1st speed 1/min:	800	+	Shutoff
Del. quantity m3/: 2,010,0			1	electromagnet Volt: 12
Part			1	Del quantity cm3/: 2.010.0
2rd speed	IIIII	10	1	1000 -
TD travel	electromagnet voit:	4500	T	
## Shutoff electromagnet Volt: 12 Supply-pump pressure characteristic:  Ist speed 1/min: 600 Shutoff electromagnet Volt: 12 Supply-pump pressure characteristic:  Ist speed 1/min: 600 Shutoff electromagnet Volt: 12 Supply-pump pressure bar: 2,93,5 Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 1	and speed 1/min:	1500	+	
## Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12 The travel min: 8,69,4 min: (8,39,7)  ## Shutoff electromagnet Volt: 12 ## Supply-pump pressure characteristic:  ## St speed 1/min: 600 ## Shutoff electromagnet Volt: 12 ## Supply-pump pressure characteristic:  ## St speed 1/min: 600 ## Shutoff electromagnet Volt: 12 ## Supply-pump pressure bar: 2,93,5 ## Shutoff electromagnet Volt: 12 ## Supply-pump ## Supply-pu	TD travel mm:	5,96,3	+	
Del. quantity cm3/: 20,027,0	mn:	(5,46,8)	+	electromagnet Volt: 12
Shutoff   Shut		•	+	Del. quantity cm3/: 20,026,0
## Speed 1/min: 2000 ## Shutoff		12	1	1000s.: (19.027.0)
TD travel mm: 8,69.4  Shutoff electromagnet Volt: 12  th speed 1/min: 2300  TD travel mm: (8,39.7)  Shutoff electromagnet Volt: 12  Shutoff electromagnet Volt: 12  Shutoff electromagnet Volt: 12  Shutoff electromagnet Volt: 12  Supply-pump pressure characteristic: 1st speed 1/min: 600  Shutoff electromagnet Volt: 12  Supply-pump pressure bar: 2,93,5  Shutoff electromagnet Volt: 12  2nd speed 1/min: 1500  Shutoff electromagnet Volt: 12  2nd speed 1/min: 1500  Shutoff electromagnet Volt: 12  2nd speed 1/min: 2300  Shutoff electromagnet Volt: 12  2nd speed 1/min: 2300  Shutoff electromagnet Volt: 12  2nd speed 1/min: 2300  Shutoff electromagnet Volt: 12  Overlow quantity at overflow valve: 12  Del. quantity cm3/: 31,534,5  Bully-pump pressure bar: 7,78,3  Shutoff electromagnet Volt: 12  Overlow quantity at overflow valve: 12  Overlow quantity at overflow valve: 13  Del quantity cm3/: 0,03,0  Delivery-quant. and breakaway char: 14  Ind speed 1/min: 2800  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 8,012,0  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 8,012,0  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 8,012,0  Ind speed 1/min: 2800  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 0,03,0  Ind speed 1/min: 2800  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 8,012,0  Ind speed 1/min: 2800  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 0,03,0  Ind speed 1/min: 2800  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 0,03,0  Ind speed 1/min: 2800  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 0,03,0  Ind speed 1/min: 2800  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 0,03,0  Ind speed 1/min: 1500  Injqty. dif. measurement: 1500  Injqty. cm3/: 6,08,0 # difference 1000s: -	and enough 1/min:	ວ່າກົດດ	1	
Shutoff   electromagnet Volt: 12	Jiu specu (/iiiii.	9.4 0 /	T	
Shutoff   electromagnet Volt: 12   4th speed	io travet um:	0,07,4	T	
Petertromagnet Volt: 12		(8,39,1)	+	electromagnet volt: 12
4th speed 1/min: 2300 TD travel mm: 9,410,2 mm: 9,410,5) Shutoff electromagnet Volt: 12  Supply-pump pressure characteristic: 1st speed 1/min: 600 Supply-pump pressure bar: 2,93,5 Shutoff electromagnet Volt: 12 2nd speed 1/min: 1500 Shutoff electromagnet Volt: 12 2nd speed 1/min: 1500 Supply-pump pressure bar: 2,93,5 Shutoff electromagnet Volt: 12 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,56,1 Shutoff electromagnet Volt: 12 3nd speed 1/min: 2300 Supply-pump pressure bar: 7,78,3 Shutoff electromagnet Volt: 12 Supply-pump pressure bar: 7,78,3 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve:  1st speed 1/min: 390 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve:  1st speed 1/min: 390 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve:  1st speed 1/min: 390 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve:  1st speed 1/min: 390 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve:  1st speed 1/min: 390 Shutoff electromagnet Volt: 12 Del. quantity cm3/10,0,01,6  1dle delivery:  1st speed 1/min: 390 Shutoff electromagnet Volt: 12 Del. quantity cm3/10,0,01,6  1dle delivery:  1st speed 1/min: 390 Shutoff electromagnet Volt: 12 Del. quantity cm3/10,0,03,0  1dle delivery:  1st speed 1/min: 390 Shutoff electromagnet Volt: 12 Del. quantity cm3/10,0,03,0  1dle delivery:  1st speed 1/min: 390 Shutoff electromagnet Volt: 12 Del. quantity cm3/10,0,03,0  2nd speed 1/min: 390 Shutoff electromagnet Volt: 12 Del. quantity cm3/10,0,03,0  2nd speed 1/min: 390 Shutoff electromagnet Volt: 12 Del. quantity cm3/10,0,03,0  2nd speed 1/min: 390 Shutoff electromagnet Volt: 12 Del. quantity cm3/10,0,03,0  2nd speed 1/min: 390 Shutoff electromagnet Volt: 12 Del. quantity cm3/10,0,03,0  2nd speed 1/min: 390 Shutoff electromagnet Volt: 12 Del. quantity cm3/10,0,03,0  2nd speed 1/min: 390 Shutoff electromagnet Volt: 12 Del. quantity cm3/10,0,03,0  2nd speed 1/min: 390 Shutoff electromagnet Volt: 12 Del. q			+	bet quantity cms/: 51/553/
## Speed 1/min: 2300 TD travel	electromagnet Volt:	12	+	
TD travel mm: 9,410,2 mm: (9,110,5)  Shutoff electromagnet Volt: 12  Supply-pump pressure characteristic: 1st speed 1/min: 600  Supply-pump pressure bar: 2,93,5  Shutoff electromagnet Volt: 12  2nd speed 1/min: 1500  Supply-pump pressure bar: 5,56,1  Shutoff electromagnet Volt: 12  2nd speed 1/min: 2300  Shutoff electromagnet Volt: 12  2nd speed 1/min: 2300  Supply-pump pressure bar: 5,56,1  Shutoff electromagnet Volt: 12  Overlow quantity at overflow valve: 12  Overflow quantity at overflow valve: 13  Shutoff electromagnet Volt: 12  Overflow cm3/10s: (26,698,3)  Pelivery-quant. and breakaway char.: 1500  Del. quantity cm3/: 0,03,0  Shutoff electromagnet Volt: 12  Overflow : 55,5138,8 quantity cm3/: 0,03,0  Delivery-quant. and breakaway char.: 1500  Injqty. cm3/: 1500  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 30,833,2 electromagnet Volt: 12  Del. quantity cm3/: 30,531,5  Th speed 1/min: 1500  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 30,03,0  Idle delivery: 15003,0  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 30,03,0  Idle delivery: 15003,0  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 30,03,0  Idle delivery: 15003,0  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 30,03,0  Idle delivery: 15003,0  I	4th speed 1/min:	2300	+	5th speed 1/min: 2000
Shutoff electromagnet Volt: 12  Supply-pump pressure characteristic:  1st speed 1/min: 600 Supply-pump pressure bar: 2,93,5 Shutoff electromagnet Volt: 12 2nd speed 1/min: 1500 Shutoff electromagnet Volt: 12 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,56,1 Shutoff electromagnet Volt: 12 3nd speed 1/min: 2300 Supply-pump pressure bar: 7,78,3 Shutoff electromagnet Volt: 12 3nd speed 1/min: 2300 Supply-pump pressure bar: 7,78,3 Shutoff electromagnet Volt: 12 3nd speed 1/min: 600 Shutoff electromagnet Volt: 12 3nd speed 1/min: 600 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve:  1st speed 1/min: 600 Shutoff electromagnet Volt: 12 Overflow 141,683,3 Quantity cm3/10s: (26,698,3) 2nd speed 1/min: 2300 Shutoff electromagnet Volt: 12 Overflow 55,5138,8 Quantity cm3/10s: (40,5153,8) Delivery-quant, and breakaway char.:  1nd speed 1/min: 2800 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 30,833,2 dth speed 1/min: 1500 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 30,03,0  Mech. shutoff: Electr. shutoff:  1st speed 1/min: 390 Del. quantity cm3/: 0,03,0  Idle delivery:  1st speed 1/min: 390 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 390 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  1000S.: -  Load-dependent start of delivery: Injqty. dif.measurement:  1st speed 1/min: 2000: -  Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  1000S.: -  Load-dependent start of delivery: Injqty. dif.measurement:  1st speed 1/min: 1500 Injqty. cm3/: 6,08,0 # difference 1000S.: -	TD travel mm:	9.410.2	+	Shutoff
Shutoff   electromagnet Volt: 12   Supply-pump pressure characteristic:   1st speed 1/min: 600   Shutoff   electromagnet Volt: 12   Del. quantity cm3/: 30,833,2   Shutoff   electromagnet Volt: 12   Del. quantity cm3/: 30,531,5   Shutoff   electromagnet Volt: 12   Del. quantity cm3/: 30,531,5   This speed 1/min: 1500   Shutoff   electromagnet Volt: 12   Del. quantity cm3/: 31,534,5   This speed 1/min: 2300   Shutoff   Electromagnet Volt: 12   Del. quantity cm3/: 31,534,5   This speed 1/min: 2300   Shutoff   Electromagnet Volt: 12   Del. quantity cm3/: 30,531,5   This speed 1/min: 600   Shutoff   Electromagnet Volt: 12   Del. quantity cm3/: 30,534,5   This speed 1/min: 390   This speed 1/min: 390   Del. quantity cm3/: 0,03,0   This speed 1/min: 390   Del. quantity cm3/: 0,03,0   This speed 1/min: 390   This	mm.	(9.1 10.5)	1	
Supply-pump pressure characteristic:		(7,110,2)	1	Del quentity cm3/: 30.8 33.2
Supply-pump pressure characteristic:  1st speed 1/min: 600 Supply-pump pressure bar: 2,93,5 Shutoff electromagnet Volt: 12 2nd speed 1/min: 1500 Shutoff electromagnet Volt: 12 3rd speed 1/min: 2300 Shutoff electromagnet Volt: 12 3rd speed 1/min: 2300 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve:  1st speed 1/min: 600 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve:  1st speed 1/min: 390 Shutoff electromagnet Volt: 12 Overflow : 41,683,3 quantity cm3/10s: (26,698,3) 2nd speed 1/min: 2300 Shutoff electromagnet Volt: 12 Overflow : 55,5138,8 quantity cm3/10s: (40,5153,8) Delivery-quant. and breakaway char::  1nd speed 1/min: 2800 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 2800 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 2800 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt:		40	T	1000c (20 7 3/ 3)
Supply-pump pressure characteristic:  1st speed 1/min: 600 Supply-pump pressure bar: 2,93,5 Shutoff electromagnet Volt: 12 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,56,1 Shutoff electromagnet Volt: 12 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,78,3 Shutoff electromagnet Volt: 12 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,78,3 Shutoff electromagnet Volt: 12  Overlow quantity at overflow valve:  1st speed 1/min: 600 Shutoff electromagnet Volt: 12 Overflow (241,683,3) Quantity cm3/10s: (26,698,3) 2nd speed 1/min: 2300 Shutoff electromagnet Volt: 12 Overflow (3/10s: (26,698,3) 2nd speed 1/min: 2300 Shutoff electromagnet Volt: 12 Overflow (3/10s: (40,5153,8) Delivery-quant. and breakaway chan:  1nd speed 1/min: 2800 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  1000S.: -  Load-dependent start of delivery: Injqty.dif.measurement:  1st speed 1/min: 2500 Injqty.dif.measurement:	electromagnet voit:	12	1	
St speed 1/min: 600   Supply-pump   Pressure   bar: 2,93,5   Shutoff   electromagnet Volt: 12   Del. quantity cm3/: 31,534,5   Del. quantity cm3/: 30,03,0   Del. quantity cm3/: 0,03,0   Del. quantity cm3/: 0			+	
State   1/min: 600   Supply-pump   State   1/min: 500   Supply-pump	Supply-pump pressur	e characteristic:	+	
1st speed			+	electromagnet Volt: 12
Supply-pump pressure bar: 2,93,5 Shutoff electromagnet Volt: 12	1st speed 1/min:	600	+	Del. quantity cm3/: 30,531,5
pressure bar: 2,93,5 Shutoff electromagnet Volt: 12 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,56,1 Shutoff electromagnet Volt: 12 3nd speed 1/min: 2300 Supply-pump pressure bar: 7,78,3 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve:  1st speed 1/min: 600 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve:  1st speed 1/min: 600 Shutoff electromagnet Volt: 12 Overflow : 41,683,3 quantity cm3/10s: (26,698,3) 2nd speed 1/min: 2300 Shutoff electromagnet Volt: 12 Overflow : 55,5138,8 quantity cm3/10s: (40,5153,8) Delivery-quant. and breakaway char.:  1nd speed 1/min: 2800 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  Load-dependent start of delivery: Injqty.cm3/: 6,08,0 # difference 1000S.: -			1	1000s.: (28.733.3)
Shutoff electromagnet Volt: 12 2nd speed 1/min: 1500 Supply-pump pressure bar: 5,56,1 Shutoff electromagnet Volt: 12 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,78,3 Shutoff electromagnet Volt: 12 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,78,3 Shutoff electromagnet Volt: 12  Overlow quantity at overflow valve:  1st speed 1/min: 600 Shutoff electromagnet Volt: 12 Overflow : 41,683,3 quantity cm3/10s: (26,698,3) 2nd speed 1/min: 2300 Shutoff electromagnet Volt: 12 Overflow : 55,5138,8 quantity cm3/10s: (40,5153,8) Delivery-quant. and breakaway char.:  1nd speed 1/min: 2800 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 2800 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  1000s.: -  Load-dependent start of delivery: Injqty. cm3/: 6,08,0 # difference 1000s.: -	soppe, bank	20 75	1	
electromagnet Volt: 12 2nd speed 1/min: 1500  Supply-pump pressure bar: 5,56,1  Shutoff electromagnet Volt: 12 3rd speed 1/min: 2300  Supply-pump pressure bar: 7,78,3  Shutoff electromagnet Volt: 12  Overlow quantity at overflow valve:  1st speed 1/min: 600  Shutoff electromagnet Volt: 12  Overflow : 41,683,3 quantity cm3/10s: (26,698,3)  2nd speed 1/min: 2300  Shutoff electromagnet Volt: 12  Overflow : 55,5138,8 quantity cm3/10s: (40,5153,8)  Delivery-quant. and breakaway char.:  1st speed 1/min: 2800  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 0,03,0  Idle delivery:  1st speed 1/min: 390  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 8,012,0  2nd speed 1/min: 400  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 0,03,0  Load-dependent start of delivery:  1nd speed 1/min: 2800  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 0,03,0  Injqty. dif.measurement:  1st speed 1/min: 1500  Injqty. cm3/: 6,08,0 #  difference 1000s.: -		2,73,3	T	t arr are a constant
2nd speed 1/min: 1500 Supply-pump pressure bar: 5,56,1 Shutoff electromagnet Volt: 12 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,78,3 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve:  1st speed 1/min: 600 Shutoff electromagnet Volt: 12 Overflow : 41,683,3 quantity cm3/10s: (26,698,3) 2nd speed 1/min: 2300 Shutoff electromagnet Volt: 12 Overflow : 55,5138,8 quantity cm3/10s: (40,5153,8) Delivery-quant. and breakaway char.:  2nd speed 1/min: 2800 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 390 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8,012,0 2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0		40	T	
Supply—pump pressure bar: 5,56,1   Shutoff electromagnet Volt: 12   3rd speed 1/min: 2300   Supply-pump pressure bar: 7,78,3   Shutoff electromagnet Volt: 12   Overlow quantity at overflow valve:   1st speed 1/min: 600   Shutoff electromagnet Volt: 12   Overflow : 41,683,3   quantity cm3/10s: (26,698,3)   2nd speed 1/min: 2300   Shutoff electromagnet Volt: 12   Overflow : 55,5138,8   quantity cm3/10s: (40,5153,8)   Delivery—quant. and breakaway char.:    1nd speed 1/min: 2800   Shutoff electromagnet Volt: 12   Del. quantity cm3/: 0,03,0    1000s.: (5,015,0)   Delivery—quant. and breakaway char.:    Load—dependent start of delivery:   1nj.—qty. dif.measurement:   1st speed 1/min: 1500   Del. quantity cm3/: 0,03,0    1000s.: -    Load—dependent start of delivery:   1nj.—qty. dif.measurement:   1st speed 1/min: 1500   Inj.—qty. cm3/: 6,08,0 #   difference 1000s.: -		12	+	electromagnet volt: 12
pressure bar: 5,56,1 Shutoff electromagnet Volt: 12 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,78,3 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve:  1st speed 1/min: 600 Shutoff electromagnet Volt: 12 Overflow : 41,683,3 quantity cm3/10s: (26,698,3) 2nd speed 1/min: 2300 Shutoff electromagnet Volt: 12 Overflow : 55,5138,8 quantity cm3/10s: (40,5153,8) Delivery-quant. and breakaway char.:  1nd speed 1/min: 2800 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  Load-dependent start of delivery: Injqty.dif.measurement:  1st speed 1/min: 1500 Load-dependent start of delivery: Injqty.dif.measurement:  1st speed 1/min: 1500 Load-dependent start of delivery: Injqty.dif.measurement:  1st speed 1/min: 1500 Load-dependent start of delivery: Injqty.dif.measurement:	2nd speed 1/min:	1500	+	Del. quantity cm3/: 31,534,5
Shutoff electromagnet Volt: 12 3rd speed 1/min: 2300 Shutoff electromagnet bar: 7,78,3 Shutoff electromagnet Volt: 12  Overlow quantity at overflow valve:  1st speed 1/min: 600 Shutoff electromagnet Volt: 12 Overflow : 41,683,3 quantity cm3/10s: (26,698,3) 2nd speed 1/min: 2300 Shutoff electromagnet Volt: 12 Overflow : 55,5138,8 quantity cm3/10s: (40,5153,8) Delivery—quant. and breakaway char.:  1st speed 1/min: 2800 Shutoff electromagnet Volt: 12 Overflow : 55,5138,8 quantity cm3/10s: (40,5153,8) Delivery—quant. and breakaway char.:  1nd speed 1/min: 2800 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0 Load-dependent start of delivery: Inj.—qty.dif.measurement:  1st speed 1/min: 1500 Load-dependent start of delivery: Inj.—qty.dif.measurement:  1st speed 1/min: 1500 Inj.—qty. cm3/: 6,08,0 # difference 1000s.: —	Supply-pump		+	1000S.: (30,036,0)
Shutoff electromagnet Volt: 12 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,78,3 Shutoff electromagnet Volt: 12  Overlow quantity at overflow valve:  1st speed 1/min: 600 Shutoff electromagnet Volt: 12  Overflow : 41,683,3 quantity cm3/10s: (26,698,3) 2nd speed 1/min: 2300 Shutoff electromagnet Volt: 12 Overflow : 55,5138,8 quantity cm3/10s: (40,5153,8) Delivery-quant. and breakaway char.:  1nd speed 1/min: 2800 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  Load-dependent start of delivery: Injqty.dif.measurement:  1st speed 1/min: 1500 Load-dependent start of delivery: Injqty.dif.measurement:  1st speed 1/min: 1500 Injqty.cm3/: 6,08,0 # difference 1000S.: -	pressure bar:	5.56.1	+	
electromagnet Volt: 12 3rd speed 1/min: 2300 Supply-pump pressure bar: 7,78,3 Shutoff electromagnet Volt: 12  Overlow quantity at overflow valve:  1st speed 1/min: 600 Shutoff electromagnet Volt: 12  Overflow : 41,683,3 quantity cm3/10s: (26,698,3) 2nd speed 1/min: 2300 Shutoff electromagnet Volt: 12 Overflow : 55,5138,8 quantity cm3/10s: (40,5153,8) Delivery-quant. and breakaway char.:  1st speed 1/min: 2800 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  Load-dependent start of delivery: Ind speed 1/min: 2800 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  Load-dependent start of delivery: Injqty.dif.measurement:  1st speed 1/min: 1500 Injqty.cm3/: 6,08,0 # difference 1000S.: -		3,3000,	1	Mech. shutoff:
Supply—pump pressure bar: 7,78,3 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve:  1st speed 1/min: 600 Shutoff electromagnet Volt: 12 Overflow : 41,683,3 quantity cm3/10s: (26,698,3) Shutoff electromagnet Volt: 12 Overflow : 55,5138,8 quantity cm3/10s: (40,5153,8) Delivery—quant. and breakaway char.:  1st speed 1/min: 2800 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  Load—dependent start of delivery:  1st speed 1/min: 390 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8,012,0 2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  Load—dependent start of delivery: Inj.—qty. dif.measurement:  1st speed 1/min: 390 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  Load—dependent start of delivery: Inj.—qty. cm3/: 6,08,0 # difference 1000s.: —		12	1	ricoris oriacoris
Supply-pump pressure bar: 7,78,3 Shutoff electromagnet Volt: 12  Overlow quantity at overflow valve:  1st speed 1/min: 600 Shutoff electromagnet Volt: 12 Overflow : 41,683,3 quantity cm3/10s: (26,698,3) Shutoff electromagnet Volt: 12 Overflow : 55,5138,8 quantity cm3/10s: (40,5153,8) Delivery-quant. and breakaway char.:  1st speed 1/min: 390 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8,012,0 1000s.: 55,5138,8 quantity cm3/10s: (40,5153,8) Delivery-quant. and breakaway char.:  1nd speed 1/min: 2800 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  Load-dependent start of delivery: Injqty.dif.measurement:  1st speed 1/min: 390 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  Load-dependent start of delivery: Injqty.dif.measurement:  1st speed 1/min: 390 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  Injqty.cm3/: 6,08,0 # difference 1000s.: -		2700	T	Electa shutoff:
Shutoff electromagnet Volt: 12  Overlow quantity at overflow valve:  1st speed 1/min: 600 Shutoff electromagnet Volt: 12  Overflow : 41,683,3 quantity cm3/10s: (26,698,3) 2hd speed 1/min: 2300 Shutoff electromagnet Volt: 12 Overflow : 55,5138,8 quantity cm3/10s: (40,5153,8)  Delivery—quant. and breakaway char.:  1st speed 1/min: 390 Shutoff electromagnet Volt: 12 Overflow : 55,5138,8 quantity cm3/10s: (40,5153,8)  Delivery—quant. and breakaway char.:  1nd speed 1/min: 2800 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  Load—dependent start of delivery: Inj.—qty. dif.measurement:  1st speed 1/min: 390 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  Load—dependent start of delivery: Inj.—qty. dif.measurement:  1st speed 1/min: 1500 Inj.—qty. cm3/ : 6,08,0 # difference 10008.: —		2300	T	Efecti. Suutoii:
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Overlow quantity at overflow valve:	pressure bar:	7,78,5	+	1st speed 1/min: 590
Overlow quantity at overflow valve:	Shutoff		+	Del. quantity cm3/: 0,03,0
Overlow quantity at overflow valve:  1st speed 1/min: 600 Shutoff electromagnet Volt: 12 Overflow : 41,683,3 quantity cm3/10s: (26,698,3) 2nd speed 1/min: 2300 Shutoff electromagnet Volt: 12 Overflow : 55,5138,8 quantity cm3/10s: (40,5153,8) Delivery—quant. and breakaway char.:  1nd speed 1/min: 2800 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  Load—dependent start of delivery: Inj.—qty.dif.measurement:  1st speed 1/min: 1500 Inj.—qty.dif.measurement:  1st speed 1/min: 1500 Inj.—qty. cm3/ : 6,08,0 # difference 1000s.: —	electromagnet Volt:	12	+	1000s.: -
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electromagnet Volt: 12 Overflow : 55,5138,8 quantity cm3/10s: (40,5153,8)  Delivery-quant. and breakaway char.:  Ind speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0  Load-dependent start of delivery: Injqty.dif.measurement:  Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,01,6 Injqty. cm3/ : 6,08,0 # difference 1000S.: -	2nd speed 1/min	2300	+	Del. quantity cm3/: 8,012,0
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Load—dependent start of delivery: Ind speed 1/min: 2800			+	Det. quantity cm3/: U,U5/U
Ind speed 1/min: 2800 Load-dependent start of delivery: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,01,6 1000s.: - Load-dependent start of delivery: Injqty.dif.measurement:  1st speed 1/min: 1500 Injqty.cm3/: 6,08,0 # difference 1000s.: -	Delivery quant. and	d breakaway char.:	+	1000S.: -
1nd speed		•	+	
1nd speed			1	load-dependent start of delivery:
Shutoff electromagnet Volt: 12	1nd anned 1/min	2800	1	
electromagnet Volt: 12		. 2000	T	Till action of the second second
Del. quantity cm3/: 0,01,6		40	<b>T</b>	1-t
1000s.: - + difference 1000s.: -			†	ist speed 1/min: 1500
1000S.: - + difference 1000S.: -	Del. quantity cm3/	: 0,01,6	+	
	1000s.	<del>-</del>	+	difference 1000S.: -
man Abana 1, milla mana		: 2650	1	
	List opeca (/ mili		1	

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Shutoff electromagnet Volt: 12 SP press.-dif.measurement: pompa di mandata (FP): 1st speed 1/min: 1500 Supply pump-: 0,1...0,3 pressure difference bar: -Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1/min: 300 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40,0...60.00 1000s.: -1/min: 400 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 33,00...43,00 1600s.: -Shutoff electromagnet: Cut-in : 19,0 min voltage : 12,0 Rated voltage Mounting and assembly dimensions: Designation mm: 3,2...3,4 mm: 5,3...5,7 mm: 1,3...1,7 mm: 17,0...19.0 mm: 10.5...13.9 KF MS XK Overflow restriction 0.55 mm - Part No. ..303

Note inst. in remarks column

: PEU 1.9 K11 Test scheet : 13.04.92 Edition : 31.01.92 replaces : ISO-4113 Calibrating oil

: VE4/8F2300R425-1 Injection pump : 0 460 484 054 Type number

Customer Part-No. :

Customer-specific information Customer : PSA

: XUD9AL - D70/N2/N3 Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil °C return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening

bar: 130.00...133.00 Pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450 x Length

Start of delivery

Indicator setting

Piston stroke mm: 0.3 Outlet : A

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1250 Speed

Setting value mm: 3.50...3.90

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1250 Speed

Setting value bar: 5.70...6.30

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 1250 Speed

Del. quantity cm3/ 1000s.: 30.00...31.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2.0 1000s.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500

Del. quantity cm3/

1**00**0s.: 2.50...3.50

Shutoff

electromagnet Volt: 12

Full-load speed regulation

1/min: 2650 Speed

Del. quantity cm3/

1000s.: 9.00...13.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 42.00...68.00 mind 1000s.: 42.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1250 Speed hPa: 12 Charge press

cm3/Inj.-qty.

difference 1000s.: 2.00...8.00

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV)

1/min: 1250 1.Speed

TD-travel

mm: 2.00...3.00 difference

Shutoff

electromagnet Volt: 12 SP press.—dif.measurement pompa di mandata (FP)

1/min: 1250 1.Speed

Supply pump Delivery-quant. and breakaway char.: pressure bar: 1.20...1.80 difference Shutoff 1/min: 2900 2nd speed electromagnet Volt: 12 Shutoff electromagnet Volt: 12
Del. quantity cm3/: 0.00...6.00
1000s.: (0.00...6.00)
5th speed 1/min: 2650 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 9.00...13.00 1000s.: (7.00...15.00) 1/min: 2000 2nd speed mm: 6.70...7.50 mm: (6.40...7.80) TD travel 1/min: 2500 Shutoff 8th speed Shutoff electromagnet Volt: 12 3rd speed 1/min: 1250 mm: 3.50...3.90 TD travel mm: (3.00...4.40) Shutoff electromagnet Volt: 12 4th speed 1/min: 800 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 32.50...34.50 10005.: (31.30...35.70) 4th speed mm: 1.20...2.00 TD travel mm: (0.90...2.30) 1/min: 1250 12th speed Shutoff Shutoff electromagnet Volt: 12 Supply-pump pressure characteristic: 1/min: 500 20th speed 1st speed Shutoff Supply-pump electromagnet Volt: 12 Del. quantity cm3/: 30.00...33.00 1000s.: (28.50...34.50) bar: 3.30...3.90 pressure bar: (3.10...4.10) Shutoff electromagnet Volt: 12 2nd speed 1/min: 1250 Mech. shutoff: Mech. Abstellung: Supply-pump bar: 5.70...6.30 pressure bar: (5.50...6.50) Shutoff 1000s.: (0.00...3.00) electromagnet Volt: 12 3rd speed 1/min: 2200 Shutoff electromagnet volt: 12 Supply-pump bar: 8.20...8.80 pressure bar: (8.00...9.00) Electr. shutoff: Shutoff electromagnet Volt: 12 1000s.: (0.00...3.00) Overlow quantity at overflow valve: Shutoff 1/min: 500 electromagnet volt: -1st speed Shutoff electromagnet Volt: 12 Damper set qty.: : 41.70...83.40 Overflow cm3/10s: (27.80...97.30) 1/min: 2200 LFG-setting: quantity 2nd speed solidale con carcassa: Idle delivery: Shutoff electromagnet Volt: 12 Overflow : 55.60...138.90 1/min: 375 1st speed Shutoff cm3/10s: (41.70...152.90) quantity

electromagnet Volt: 12 Del. quantity cm3/: 6.50...8.50 1000S.: (3.50...11.50)

High Idle:

1/mi: 475 1st speed

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 8.50...10.50 1000s.: (5.50...13.50)

Residual:

1/min: 500 1.Rotacao

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 2.50...3.50

1000s.: (1.00...5.00)

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1st speed 1/min: 1250

Inj.-qty. cm3/ : 2.00...8.00 difference 1000s.: (2.00...8.00)

Shutoff

electromagnet Volt: 12

TD-travel dif.measurement:

correttore enticipo iniezione (SV): 1st speed 1/min: 1250

: 2.00...3.00 TD-travel mm: (1.90...3.10) difference

Shutoff

electromagnet Volt: 12

SP press.-dif.measurement:

pompa di mandata (FP): 1st speed 1/min: 1250

Supply pump-

: 1.20...1.80 pressure bar: (1.10...1.90) difference

Shutoff

electromagnet Volt: 12

Automatic starting fuel delivery:

1/min: 225 1st speed

Shutoff

electromagnet Volt: 12
Del. quantity cm3/: 37.00...71.00
1000S.: (37.00...71.00)

1/min: 350 2nd speed

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 20.00...40.00

1000s.: (20.00...40.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 42.00...68.00 1000s.: (42.00...68.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

mm: 3.6...3.8 mm: KOT KF MS mm: 1.2...1.6

Remarks:

Overflow restriction 0.55 mm - Part No.

...303

#### Note inst. in remarks column

: PEU 1.9 K13 Test scheet : 31.01.92 Edition

replaces

Calibrating oil : ISO-4113

: VE4/8F2300R425-2 Injection pump : 0 460 484 055 Type number

Customer Part-No. :

Customer-specific information

Customer : PSA

: XUD9A-N2 - BVA Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating oil return temp.

with thermometer: 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening

bar: 130.00...133.00 Pressure

Test ini. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450 x Length

Start of delivery

Indicator setting

Piston stroke mm: 0.3 **Outlet** 

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1250 Speed

Setting value mm: 3.40...3.80

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1250 Speed

Setting value bar: 6.20...6.80

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 1250

Del. quantity cm3/ 1000s.: 30.00...31.00

Shutoff

electromagnet Volt: 12 cm3/: 2.0 Dispersion 1000s.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500

Del. quantity cm3/

1000s.: 2.50...3.50

Shutoff

electromagnet Volt: 12

Full-load speed regulation

1/min: 2650 Speed

Del. quantity cm3/

1000s.: 9.00...13.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 42.00...68.00

1000s.: 42.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1250 Speed Charge press hPa: 12

cm3/

Inj.—qty. cm3/ difference 1000s.: 2.00...8.00

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV)

1/min: 1250 1.Speed

TD-travel

mm: 1.50...2.70 difference

Shutoff

electromagnet Volt: 12 SP press.-dif.measurement pompa di mandata (FP) 1/min: 1250 1.Speed

Supply pump Delivery-quant. and breakaway char.: pressure difference bar: 0.80...1.40 Shutoff 1/min: 2900 electromagnet Volt: 12 2nd speed Shutoff Inspection pump test specifications Test specifications in parentheses electromagnet Volt: 12 Del. quantity cm3/: 0.00...6.00 1000s.: (0.00...6.00) 5th speed 1/min: 2650 Timing-device characteristic: Shutoff 1/min: 2000 2nd speed mm: 7.50...8.30 mm: (7.20...8.60) TD travel 8th speed Shutoff Shutoff electromagnet Volt: 12 1/min: 1250 mm: 3.40...3.80 mm: (2.90...4.30) electromagnet Volt: 12 3rd speed Del. quantity cm3/: 19.50...25.20 1000s.: (17.50...27.50) 9th speed 1/min: 2200 TD travel Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 32.50...34.50 1000s.: (31.30...35.70) 1/min: 800 4th speed mm: 1.00...1.80 TD travel mm: (0.70...2.10) 1/min: 1250 12th speed Shutoff Shutoff electromagnet Volt: 12 Supply pump pressure characteristic: 1/min: 500 1st speed Shutoff Supply-pump electromagner Volt: 12 Del. quantity cm3/: 30.00...33.00 10005.: (28.50...34.50) bar: 4.40...5.00 pressure bar: (4.20...5.20) Shutoff electromagnet Volt: 12 2nd speed 1/min: 1250 Mech. shutoff: Mech. Abstellung: Supply-pump bar: 6.20...6.80 pressure bar: (6.00...7.00) 1/min: 2200 1st speed Del. quantity cm3/: 0.00...3.00 Shutoff 1000s.: (0.00...3.00) electromagnet Volt: 12 1/min: 2200 Shutoff 3rd speed electromagnet volt: 12 Supply-pump bar: 8.50...9.10 pressure bar: (8.30...9.30) Electr. shutoff: Shutoff 1/min: 375 electromagnet Volt: 12 1st speed Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Overlow quantity at overflow valve: Shutoff 1/min: 500 electromagnet volt: -1st speed Shutoff electromagnet Volt: 12 Damper set qty.: : 41.70...83.40 Overflow cm3/10s: (27.80...97.30) LFG-setting: quantity 1/min: 2200 solidale con carcassa: 2nd speed Idle delivery: Shutoff electromagnet Volt: 12 1/min: 375 : 55.60...138.90 1st speed Overflow cm3/10s: (41.70...152.90) Shutoff quantity

electromagnet Volt: 12 Del. quantity cm3/: 6.50...8.50 1000s.: (3.50...11.50) High Idle: 1/mi: 475 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.50...10.50 1000s.: (5.50...13.50) Residual: 1/min: 500 1.Rotacao Shutoff electromagnet Volt: 12 Del. quantity cm3/: 2.50...3.50 1000s.: (1.00...5.00) Load-dependent start of delivery: Inj.-qty.dif.measurement: 1/min: 1250 1st speed : 2.00...8.00 Inj.-qty. cm3/ difference 1000S.: (2.00...8.00) Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1250 TD-travel : 1.60...2.60 mm: (1.50...2.70) difference Shutoff electromagnet Volt: 12 SP press.-dif.measurement: pompa di mandata (FP): 1st speed 1/min: 1250 Supply pump-: 0.80...1.40 pressure bar: (0.70...1.50) difference Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1/min: 225 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 37.00...71.00 1000s.: (37.00...71.00)

1/min: 350

electromagnet Volt: 12 Del. quantity cm3/: 20.00...40.00 1000s.: (20.00...40.00)

1/min: 100 4th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 42.00...68.00 1000S.: (42.00...68.00) Shutoff electromagnet: Cut-in : 10.0 min voltage : 12.0 Rated voltage Mounting and assembly dimensions: Designation mm: 3.6...3.8 KF mm: KOT mm: 1.2...1.6 MS

Remarks:

Overflow restriction 0.55 mm - Part No. ..303

2nd speed Shutoff

Note inst. in remarks column

Test scheet : PEU : 15.04.92 Edition

replaces

: ISO-4113 Calibrating oil

: VE4/8F2300R171-3 Injection pump : 0 460 484 056 Type number

Customer Part-No. :

Customer-specific information

: PSA Customer

: XUD7 L Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening

bar: 130.00...133.00 Pressure

Test ini. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450 x Length

Start of delivery

Indicator setting

Piston stroke mm: 0.3 Outlet : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1250 Speed

Setting value mm: 3.40...3.80

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1250 Speed

Setting value bar: 4.30...4.90

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 1250 Speed

Del. quantity cm3/ 1000s.: 28.00...29.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2.0 1000s.: (2.5)

Residual-Delivery Setting

1/min: 550

Del. quantity cm3/ 10COS.: 3.50...4.50

Shutoff

electromagnet Volt: 12

Full-load speed regulation

1/min: 2440 Speed

Del. quantity cm3/

1000s.: 19.00...25.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 42.00...82.00

mind 1000s.: 42.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Ini.-qty.dif.measurement:

1/min: 1250 Speed

Ini.-aty. cm3/

difference 1000S.: 7.00...11.00

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV) 1.Speed 1/min: 1250

1.Speed

TD-travel

mm: 0.90...1.10 difference

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Del. quantity cm3/: 11.50...17.50 1000s.: (10.00...19.00) Timing-device characteristic: 1/min: 2440 1/min: 2000 mm: 7.20...8.00 mm: (6.90...8.30) 5th speed 2nd speed Shutoff TD travel electromagnet Volt: 12
Del. quantity cm3/: 19.00...25.00
1000S.: (18.00...26.00)
9th speed 1/min: 2250 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1250 9th speed mm: 3.40...3.80 mm: (3.10...4.10) Shutoff TD travel electromagnet Volt: 12
Del. quantity cm3/: 27.50...29.50
1000S.: (26.20...30.80)
10th speed 1/min: 2000 Shutoff electromagnet Volt: 12 4th speed 1/min: 800 10th speed Shutoff mm: 0.50...1.30 TD travel electromagnet Volt: 12 Del. quantity cm3/: 27.50...29.50 10005.: (26.20...30.80) mm: (0.20...1.60) Shutoff electromagnet Volt: 12 11th speed 1/min: 800 Supply-pump pressure characteristic: Shutoff 1st speed 1/min: 800 Supply-pump bar: 3.00...3.60 12th speed pressure Shutoff Shutoff electromagnet Volt: 12
Del. quyntity cm3/: 28.00...29.00
1000S.: (26.20...30.80)
20th speed 1/min: 500 electromagnet Volt: 12 1/min: 1250 2nd speed Supply-pump bar: 4.30...4.90 pressure Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 28.00...31.00 1000s.: (26.50...32.50) electromagnet Volt: 12 3rd speed 1/min: 2000 3rd speed Supply-pump bar: 6.40...7.00 pressure Mech. shutoff: Shutoff Mech. Abstellung: electromagnet Volt: 12 1st speed 1/min: 2250 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Overlow quantity at overflow valve: 1st speed 1/min: 500 Shutoff Shutoff electromagnet volt: 12 electromagnet Volt: 12 : 41.70...83.40 Overflow cm3/10s: (26.70...98.40) 1/min: 2250 Electr. shutoff: quantity 2nd speed Shutoff electromagnet Volt: 12 1000s.: (0.00...3.00) : 55.60...139.00 Overflow Shutoff cm3/10s: (40.60...153.00) quantity electromagnet volt: -Delivery quant. and breakaway char .: Damper set qty.: 1/min: 2690 LFG-setting: 2nd speed solidale con carcassa: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 3.50...10.50 1000\$:: (3.50...10.50) Idle delivery: 1/min: 375 1st speed 1/min: 2540 Shutoff 3rd speed electromagnet Volt: 12 Shutoff electromagnet Volt: 12

Del. quantity cm3/: 44.00...84.00 1000s.: (34.00...74.00) Del. quantity cm3/: 8.00...12.00 1000s.: (6.00...14.00) 1/min: 300 2nd speed High Idle: Shutoff electromagnet Volt: 12
Del. quaritity cm3/: 14.00...34.00
1000S.: (44.00...64.00) 1/mi: 450 1st speed Shuroff electromagnet Volt: 12 Del. quantity cm3/: 8.00...12.00 1000s.: (6.00...14.00) 1/min: 100 4th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 42.00...82.00 1000S.: (42.00...82.00) Residual: 1/min: 550 1.Rotacao Shutoff electromagnet Volt: 12 Shutoff electromagnet: Del. quantity cm3/: 3.50...4.50 1000s.: (2.50...5.50) Cut-in : 10.0 min voltage : 12.0 Rated voltage Load-dependent start of delivery: Ini.-aty.dif.measurement: Mounting and assembly dimensions: 1/min: 1250 1st speed Inj.-qty. cm3/ : 7.00...11.00# Designation mm: 3.2...3.4 mm: 5.3...5.7 difference 1000s.: (4.00...14.00) K KF Shutoff mm: 1.2...1.6 MS electromagnet Volt: 12 1/min: 1250 3rd speed cm3/: +2.00...8.00\* Remarks: Inj.-aty. difference 1000s.: +(2.00...8.00) Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1/min: 1250 1st speed : 0.90...1.10 # TD-traveL mm: (0.90...1.10) difference Shutoff electromagnet Volt: 12 1/min: 1250 : 1.00...2.00 \* mm: (0.90...2.10) 3rd speed TD-travel difference Shutoff electromagnet Volt: 12 SP press.-dif.measurement: pompa di mandata (FP): 1/min: 1250 1st speed Supply pump-: 0.50...1.10 \* pressure bar: (0.40...1.20) difference Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1/min: 200 1st speed

Shutoff

electromagnet Volt: 12

Note inst. in remarks column

Test scheet : VMA : 09.04.92 Edition : 01.85 replaces : ISO 4113 Calibrating oil

: VE4/9F2150L31-1 Injection pump Type number : 0 460 494 133

Customer-specific information : MOTORI VM Customer

: HR 488 HT Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer: 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening |

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 688 901 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length

Start of delivery Prestroke mm: -(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1900 Speed Charge press. hPa: 800

Setting value mm: 6,40...6,80

Shutoff

electromagnet Volt: 12.0

Supply-pump pressure

1/min: 1900 Speed Charge press hPa: 800

Setting value bar: 5.70...6.30

Shutoff

electromagnet Volt: 12.0

Full-load del. with charge press.:

Speed 1/min: 1600 Charge press. hPa: 800

Del. quantity cm3/

1000s.: 46.50...47.50

Shutoff electromagnet Volt: 12.0 Dispersion cm3/: 3,0 1000s.: -

Full-load del. w/out charge press.:

1/min: 600

Del. quantity cm3/ 1000s.: 31.50...32.50

Shutoff

electromagnet Volt: 12.0

Low-idle speed regulation

1/min: 400 Speed Charge press hPa: -Del. quantity cm3/ 1000s.: 8.00...12.00

Shutoff

electromagnet Volt: 12.0 Del. quantity cm3/: 3.0 1000s.: -

Full-load speed regulation

1/min: 2300 Charge press hPa: 800 Del. quantity cm3/

1000s.: 27.50...33.50

Shutoff

electromagnet Volt: 12.0

Start:

1/min: 100 Speed Charge press hPa: -Del. quantity cm3/: mind 1000s.: 44.0 Shutoff

electromagnet Volt: 12.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 1000 1st speed Charge press hPa: 800

TD travel mm:	1.302.10	+	Shutoff	
mm:	(1.002.40)	+	electromagnet Volt:	12.0
electromagnet Volt:	12.0	†	Del. quantity cm3/:	59.5041.5U
2nd speed 1/min:	1900	T	2nd speed 1/min:	(37.6042.00)
Charge press hPa: TD travel mm:	6 40 6 80	I	Charge press. hPa:	
mn:	(5.907.30)	1	Shutoff	
Shutoff		+	<pre>electromagnet Volt:</pre>	12.0
electromagnet Volt:	12.0	+	Del. quantity cm3/:	0.02.0
3rd speed 1/min:		+	1000s.:	
Charge press hPa:	800	†	3rd speed 1/min:	
	7.508.30 (7.208.60)	Ī	Charge press. hPa: Shutoff	ou
Shutoff	(7.200.00)	I	electromagnet Volt:	12.0
electromagnet Volt:	12.0	+	Del. quantity cm3/:	0.010.0
		+	1000S.:	order.
Supply-pump pressure	characteristic:	+	4th speed 1/min:	
		+	Charge press. hPa:	800
1st speed 1/min:	400	†	Shutoff	12.6
Charge press. hPa:	800	I	electromagnet Volt: Del. quantity cm3/:	27 50 33 50
Supply-pump pressure bar:	2.002.60	I	1000s.:	(26.5034.50)
Shutoff	2.002.00	1	5th speed 1/min:	
electromagnet Volt:	12.0	+	Charge press. hPa:	
2nd speed 1/min:	1900	+	Shutoff	40.0
Charge press. hPa:	800	+	electromagnet Volt:	12.0
Supply-pump	E 70 / 70	†	Del. quantity cm3/:	(39.243.80)
	5.706.30	Ī	6th speed 1/min:	1600
Shutoff electromagnet Volt:	12 0	I	Charge press. hPa:	800
3rd speed 1/min:	2150	1	Shutoff	
Charge press. hPa:	800	+	electromagnet Volt:	12.0
Supply-pump		+	Del. quantity cm3/:	46.5047.50
	6.306.90	+		(44.7049.30)
Shutoff	47.0	†	7th speed 1/min:	
electromagnet Volt:	12.0	Ī	Charge press. hPa: Shutoff	210
Overlow quantity at	overflow valve:	I	electromagnet Volt:	12.0
Over tow qualities at	Over from vacve.	+	Del. quantity cm3/:	39.3041.30
1st speed 1/min:	600	+	1000s.:	(37.6042.00)
Charge press. hPa:		+	8th speed 1/min:	
Shutoff		+	Charge press. hPa:	
electromagnet Volt:	12.0	†	Shutoff	12.0
Overflow : quantity cm3/10s:	42.0083.00	I	electromagnet Volt: Del. quantity cm3/:	31.50 32.50
2nd speed 1/min:		I	1000s.	(29.8034.20
Charge press. hPa:		+	100000	
Shutoff		+	Mech. shutoff:	
electromagnet Volt:	12.0	+	- 4	
	55.00138.00	+	Idle delivery:	
quantity cm3/10s:	(40.00153.00)	T	1st speed 1/min:	. <b>ለ</b> ስስ
Delivery-quant. and	breakaway char •	I	Shutoff	. 400
vetively quality and	Di Cakaway Chai	+	electromagnet Volt:	12.0
		+	Del. quantity cm3/:	8.0012.0
1nd speed 1/min:	600	+	1000s.:	(6.0014.00)
Charge-air pressure		+	Dispersion cm3/	
	270	†	2nd speed 1/min	
LDA-stroke mm:	3.8	1	2nd speed 1/min:	. 500
		T		

Shutoff electromagnet Volt: 12.0 Del. quantity cm3/: 0.0...6.00 1000s.: -1/min: 800 3rd speed Shutoff electromagnet Volt: 12.0 Del. quantity cm3/: 0.0....2.0 10005.: -Automatic starting fuel delivery: 1/min: 350 1st speed Shutoff electromagnet Volt: 12.0 Del. quantity cm3/: 44.00... 1000s.: -

1/min: 450 2nd speed

Shutoff

electromagnet Volt: 12.0 Del. quantity cm3/: 0.0...43.0 1000s.: -

## Shutoff electromagnet:

Cut-in

: 10.0 min voltage : 12.0 Rated voltage

## Mounting and assembly dimensions:

Designation

mm: 3.3 mm: 5.7...5.9 mm: 0.7...0.9 K KF MS SVS max. mm: 5.6 mm: 3.8 mm: 20.2...22.2 mm: 8.7...12.1 LDA stroke XK

XL

## Remarks:

Note inst. in remarks column

Test scheet : REN Edition : 13.04.92

replaces Calibrating oil : ISO-4113

: VE4/9F2200R416 Injection pump : 0 460 494 273 Type number

Customer Part-No. :

Customer-specific information Customer

: J8S - 890 Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening

bar: 130.00...133.00 Pressure

Test inj. tubing : 1 680 750 043

Outside diameter : 6.00 x Wall thickness : 2.00 mn: 450 x Length

Start of delivery

mm: 0.2 Prestroke

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 0.3

mm: +-0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1400 Charge press. hPa: 800

Setting value mm: 4.00...4.40

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1400 Speed Charge press hPa: 800

Setting value bar: 5.10...5.70

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1400 Speed Charge press. hPa: 800

Del. quantity cm3/ 1000s.: 47.20...48.20

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2.5 1000S.: (3.0)

Full-load del. w/out charge press.:

1/min: 600 Speed

Del. quantity cm3/ 1000s.: 37.00...38.00

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425

Del. quantity cm3/ 1000s.: 7.00...11.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 2.5 10008.: (3.0)

Full-load speed regulation

1/min: 2400 Speed Charge press hPa: 800 Del. quantity cm3/ 1000s.: 23.00...29.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 60.00...100.00 mind 1000s.: 60.00

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

	+ 2nd speed 1/min: 2000
Timing-device characteristic:	Charge press. hPa: 800
	Shutoff
2nd speed 1/min: 2000	+ electromagnet Volt: 12
Charge press hPa: 800	4 Overflow : 55.60139.00
TD travel mm: 6.207.00	quantity cm3/10s: (40.60153.00)
mm: (6.207.00)	+
Shutoff	+ Delivery-quant. and breakaway char.:
electromagnet Volt: 12	+
3rd speed 1/min: 1400	+
Charge press hPa: 800	+ 1nd speed 1/min: 700*
TD travel mm: 4.004.40	+ Charge-air pressure-setting
mm: (3.504.90)	+ point hPa: 200
Shutoff	+ Shutoff
electromagnet Volt: 12	+ electromagnet Volt: 12
4th speed 1/min: 1000	1 Del. quantity cm3/: 41.0042.00
Charge press hPa: 800	1000s.: (38.5044.50)
TD travel mm: 1.902.70	1 2nd speed 1/min: 2700
mm: (1.603.00)	+ Charge press. hPa: 800
Shutoff	+ Shutoff
electromagnet Volt: 12	+ electromagnet Volt: 12
6th speed 1/min: 1800	+ Del. quantity cm3/: 0.003.00
Charge press. hPa: 800	+ 1000S.: (0.003.00)
TD travel mm: 5.706.50	4 3rd speed 1/min: 2500
mm: (5.406.80)	+ Charge press. hPa: 800
Shutoff	+ Shutoff
electromagnet Volt: 12	+ electromagnet Volt: 12
	+ Del. quantity cm3/: 2.5017.50
Supply-pump pressure characteristic:	1000s.: (2.5017.50)
capters, benite to account and account account	- 5th speed 1/min: 2400
1st speed 1/min: 600	- Charge press. hPa: 800
Charge press. hPa: -	+ Shutoff
Supply-pump	+ electromagnet Volt: 12
pressure bar: 2.603.20	+ Del. quantity cm3/: 23.0029.00
bar: (2.303.50)	10005.: (22.0030.00)
Shutoff	+ 9th speed 1/min: 2000
electromagnet Volt: 12	- Charge press. hPa: 800
2nd speed 1/min: 1400	+ Shutoff
Charge press. hPa: 800	+ electromagnet Volt: 12
Supply-pump	+ Del. quantity cm3/: 44.1045.10
pressure bar: 5.1J5.70	10005.: (42.8047.40)
bar: (4.806.00)	+ 12th speed 1/min: 1400
Shutoff	- Charge press. hPa: 800
electromagnet Volt: 12	- Shutoff
3rd speed 1/min: 2000	+ electromagnet Volt: 12
Charge press. hPa: 800	Del. quyntity cm3/: 47.2048.20
Supply-pump	1000s.: (45.4050.00)
pressure bar: 6.907.50	+ 18th speed 1/min: 600
bar: (6.607.80)	+ Charge press. hPa: -
Shutoff	+ Shutoff
electromagnet Volt: 12	+ electromagnet Volt: 12
Common and the second second	+ Del. quantity cm3/: 37.0038.00
Overlow quantity at overflow valve:	+ 1000S,: (34.5040.50)
and and deminated and and read there.	+ 20th speed 1/min: 1000
1st speed 1/min: 600	Charge press. hPa: 800
Charge press. hPa: -	+ Shutoff
Shutoff	electromagnet Volt: 12
electromagnet Volt: 12	+ Del. quantity cm3/: 45.6048.60
Overflow : 41.7083.40	1000s.: (44.1050.10)
quantity cm3/10s: (26.7098.40)	+
	'

mm: 5.6...6.0 KF Mech. shutoff: mm: 1.3...1.7 MS SVS max. mm: 4.8 Electr. shutoff: 1/min: 425 Remarks: 1st speed Del. quantity cm3/: 0.00...3.00 : 1000s.: (0.00...3.00) Shutoff electromagnet vici: -Idle delivery: 1/min: 425 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 7.00...11.00 1000s.: (5.00...13.00) cm3/: 2.5 1000s.: (3.0) Dispersion 1/min: 550 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) 1/min: 450 3rd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 3.00...7.00 1000s.: (1.00...9.00) Automatic starting fuel delivery: 1/min: 180 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40.00...100.00 1000s.: (40.00...100.00) 1/min: 300 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 20.00...40.00 1000s.: (20.00...40.00) 1/min: 100 4th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 60.00...100.00 1000s.: (60.00...100.00) Shutoff electromagnet: Cut-in min voltage : 10.0 : 12.0 Rated voltage Mounting and assembly dimensions: Designation

Κ

mm: 3.2...3.4

Note inst. in remarks column

Test scheet

: 13.04.92 Edition : 04.12.91 replaces Calibrating oil : ISO-4113

: VE4/9F2250R445 Injection pump : 0 460 494 278 Type number

Customer Part-No. :

Customer-specific information

Customer : PSA

: XUD 9 TE-L (Cit. Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer : 42.00...48.00 Electronically : 40.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening

bar: 130.00...133.00 Pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 450

Start of delivery Prestroke mm: -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250 Charge press. hPa: 1000

Setting value mm: 3.80...4.20

electromagnet Volt: 12

Supply-pump pressure

1/min: 1250 Speed

Charge press hPa: 1000 Setting value bar: 5.60...6.20

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250 Charge press. hPa: 1000

Del. quantity cm3/ 1000s.: 53.50...54.50

Shutoff

electromagnet Volt: 12 cm3/: 2.0 Dispersion 1000s.: (3.0)

Full-load del. w/out charge press.:

1/min: 500 Speed

Del. quantity cm3/ 1**000s.: 37.50...38.**50

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 400 Speed Charge press hPa: -Del. quantity cm3/

1000s.: 12,0...14.0

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 2.0 1000S:: (3,0)

Residual-Delivery Setting

1/min: 500 Speed

Del. quantity cm3/

1000s.: 6.00...7.00

Shutoff

electromagnet Volt: 12

Full-load speed regulation

1/min: 2575 Charge press hPa: 1000

Del. quantity cm3/

1000s.: 12.00...16.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 200 Del. quantity cm3/: 50.00...56.00

1000s.: 50.00

Charge press. hPa: 1000 electromagnet Volt: 12 Supply-pump bar: 7.30...7.90 pressure Load-dependent start of delivery: Shutoff Ini.-qty.dif.measurement: electromagnet Volt: 12 1/min: 1250 Speed Overlow quantity at overflow valve: hPa: -Charge press Inj. qty. cm3/difference 1000s.: 11.00...15.00 # 1st speed 1/min: 500 Charge press. hPa: 1000 Shutoff Shutoff electromagnet Volt: 12 TD-travel dif.measurement electromagnet Volt: 12 : 41.70...83.40 quantity cm3/10s: (26.70...98.40) 2nd speed 1/min: 2150 Charge press. hPa: 1000 Shutoff correttore anticipo iniezione (SV) 1.Speed 1/min: 1250 Charge press hPa: -TD-travel difference mm: 0.90...1.10 # electromagnet Volt: 12 Overflow : 55.60...139.00 Shutoff electromagnet Volt: 12 cm3/10s: (40.60...154.00) quantity Inspection pump test specifications Delivery-quant. and breakaway char.: Test specifications in parentheses Timing-device characteristic: 1nd speed 1/min: 750 Charge-air pressure-setting point hPa: 350 LDA-stroke mm: 5.8 2nd speed 1/min: 2000 hPa: 1000 Charge press mm: 6.40...7.20 mm: (6.10...7.50) LDA-stroke TD travel Shutoff electromagnet Volt: 12 Shutoff Del. quantity cm3/: 46.00...47.00 1000s.: (43.50...49.50) 2nd speed 1/min: 2750 electromagnet Volt: 12 1/min: 1250 3rd speed hPa: 1000 2nd speed Charge press mm: 3.80...4.20 mm: (3.30...4.70) Charge press. hPa: 1000 TD travel Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...6.00 1000s.: -Shutoff electromagnet Volt: 12 4th speed 1/min: 750 Charge press. hPa: 1000 Shutoff Charge press hPa: 1000 mm: 1.50...2.30 TD travel mm: (1.20...2.60) Shutoff electromagnet Volt: 12 Supply-pump pressure characteristic: Charge press. hPa: 1000 Shutoff 1st speed 1/min: 750 electromagneit Volt: 12
Del. quantity cm3/: 33.00...43.00
1000S.: (32.00...44.00)
9th speed 1/min: 2150 Charge press. hPa: 1000 Supply-pump bar: 4.40...5.00 pressure Shutoff Charge press. hPa: 1000 electromagnet Volt: 12 1/min: 1250 Shutoff 2nd speed Charge press. hPa: 1000 Supply-pump electromagnet Volt: 12 Del. quantity cm3/: 49.50...51.50 1000s.: (48.30...52.70) bar: 5.60...6.20 pressure 1/min: 2000 10th speed bar: -Charge press. hPa: 1000 Shutoff

3rd speed

1/min: 2000

electromagnet Volt: 12

Shutoff

Del. quantity cm3/: 12.0014.00
1000S.: (9.0017.00)
High Idle:
High late.
1st speed 1/mi: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 11.0013.00
1000s.: (8.0016.00)
Residual:
UE2   000 C +
1.Rotacao 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 6.007.00 1000s.: (4.508.50)
10005.: 14.508.507
Load-dependent start of delivery:
Injqty.dif.measurement:
2.1,1
1st speed 1/min: 1250
Charge press. hPa: -
Injqty. cm3/ : 2.008.00
difference 1000s.: - Shutoff
electromagnet Volt: 12
etetti allagnet votti. Ta
TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
Charge press. hPa: -
TD-travel : 2.102.50 ' difference mm: (1,603.00) '
Shutoff
electromagnet Volt: 12
SP pressdif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1250
Charge press. hPa: - Supply pump-
pressure : 0,91.30
difference bar: $(0,71,50)$
Shutoff
electromagnet Volt: 12
aa.a.a.a.a.a.a.a.a.a.a.a.a.a.a.a.
Automatic starting fuel delivery:
2nd speed 1/min: 380
Charge press. hPa:
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 25.0045.00
1000s.: -
- 3rd speed 1/min: 150
Charge press. hPa: -

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 37.00...67.00 1000s.: -

4th speed 1/min: 200 Charge press. hPa: -

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 50.00...56.00 1000s.: -

## Shutoff electromagnet:

Cut-in

: 10,0 min voltage Rated voltage

# Mounting and assembly dimensions:

Designation

mm: 3,2...3,4 K KF mm: K-OT

mm: 5.8 LDA stroke

Remarks:

\* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

Overflow restriction 0.55 mm - Part No. ...303

Note inst. in remarks column

Test scheet : VWW : 14.04.92 Edition : 07.02.92 replaces : ISO-4113 Calibrating oil

: VE4/9F2300R432 Injection pump : 0 460 494 284 Type number

Customer Part-No. :

Customer-specific information

Customer

: 1.9L. UATL - B3 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

bar: 147.00...150.00 Pressure

Test ini. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery

Indicator setting Piston stroke mm: 1.0 Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1250 Speed Setting value mm: 3.70...4.10 Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1250 Speed

Setting value bar: 5.50...6.10

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 1250 Speed

Del. quantity cm3/ 1000s.: 42.00...43.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2.5 Dispersion 1000s.: (3.0)

Low-idle speed regulation

Speed 1/min: 450 Del. quantity cm3/

1000s.: 9.0...11.0

Shutoff

electromagnet Volt: 12.0 Del. quantity cm3/: 2.0 1000s.: (3.0)

Residual-Delivery Setting

1/min: 575 Speed

Del. quantity cm3/ 1000s.: 5.50...6.50

Shutoff

electromagnet Volt: 12

Full-load speed regulation

1/min: 2600

Del. quantity cm3/

1000s.: 10.00...14.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100 Del. quantity cm3/: 35.00...65.00 mind 1000s.: 35.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery: Inj.-qty.dif.measurement:

1/min: 1250 Speed

cm3/ Inj.-qty.

difference 1000s.: 4.00...10.00 \*

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV)

K01

TD-travel difference Shutoff electromagnet Volt: 12 mm: 0.60...0.80 \* Del. quantity cm3/: 0.00...6.00 1000s.: (0.00...6.00) 5th speed 1/min: 2600 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Shutoff Timing-device characteristic: 8th speed Shutoff 1/min: 2000 1st speed mm: 6.50...7.30 TD travel mm: (6.20...7.60) electromagnet Volt: 12
2nd speed 1/min: 1250
TD travel mm: 3.50...3.90 Shutoff mm: (3.00...4.40) Shutoff electromagnet Volt: 12 1/min: 750 3rd speed TD travel mm: 1.40...2.20 Shutoff electromagnet Volt: 12
Del. quyntity cm3/: 42.00...43.00
1000S.: (40.30...44.70)
15th speed 1/min: 750 mm: (1.10...2.50) Shutoff electromagnet Volt: 12 Shutoff Supply-pump pressure characteristic: electromagnet Volt: 12 Del. quantity cm3/: 34.00...37.00 10005.: (32.50...38.50) 1/min: 750 1st speed Supply-pump 1/min: 400 bar: 4.30...4.90 20th speed pressure Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 35.50...41.50 1000s.: (33.00...44.00) electromagnet Volt: 12 1/min: 1250 2nd speed Supply-pump bar: 5.50...6.10 pressure Mech. shutoff: Shutoff electromagnet Volt: 12 3rd speed 1/min: 2200 Electr. shutoff: Supply-pump 1/min: 450 pressure bar: 7.70...8.30 1st speed Del. quantity cm3/: 0.00...3.00 Shutoff 1000s.: (0.00...3.00) electromagnet Volt: 12 Shutoff Overlow quantity at overflow valve: electromagnet volt: -Idle delivery: 1/min: 400 1st speed Shutoff electromagnet Volt: 12 Overflow : 41.70...83.40 Damper set qty.: cm3/10s: (26.80...98.30) 1/min: 2200 quantity 1/min: 1000 2nd speed 2nd speed Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 11.00...13.00 1000s.: (8.00...16.00) electromagnet Volt: 12 Overflow : 55.60...138.90 cm3/10s: (40.60...153.90) quantity Delivery-quant. and breakaway char.: LFG-setting: solidale con carcassa: Idle delivery:

1/min: 1250

1. Speed

1/min: 2750

2nd speed

1/min: 450 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 9.00...11.00 1000s.: (6.00...14.00) High Idle: 1/mi: 525 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 9.00...11.00 1000S.: (6.00...14.00) Residual: 1.Rotacao 1/min: 575 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 5.50...6.50 1000S.: (4.00...8.00) 1/min: 525 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 7.30...9.30 1000s.: (5.80...10.80) Load-dependent start of delivery: Inj.-qty.dif.measurement: 1/min: 1250 1st speed Inj.-qty. cm3/ : +0.0...3.00 # difference 1000s.: -Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1250 : 1.10...1.50 # TD-travel mm: (0.90...1.70) difference Shutoff electromagnet Volt: 12 SP press.-dif.measurement: pompa di mandata (FP): 1/min: 1250 1st speed Supply pump-: 1.80...2.20 # pressure bar: (1.50...2.50) difference Shutoff electromagnet Volt: 12 Part-load del.at 3rd inj.-qty. terza fermo della portata stop (EGR set) scarico) (ARF)

Shutoff electromagnet Volt: 12
Del. quantity cm3/: 27.00...29.00
10COS.: (25.00...31.00) Automatic starting fuel delivery: 1/min: 180 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 35.00...75.00 1000s.: -1/min: 380 2nd speed Shutoff electromagnet Volt: 12
Del. quantity cm3/: 30.00...50.00
1000s.: -1/min: 100 4th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 35.00...65.00 1000s.: -Shutoff electromagnet: Cut-in min voltage : 10.0 : 12.0 Rated voltage Mounting and assembly dimensions: Designation mm: 3.2...3.4 mm: 5.1...5.5 KF mm: 1.1...1.5 MS Remarks: On initial measurement, screw in residual-quantity adjusting screw 2 mm. Following pump adjustment, screw out residual-quantity adjusting screw 2 mm.

1/min: 1000

1st speed

qaz d'échappement-ARF)

Note inst. in remarks column

Test scheet

: 14.04.92 Edition

replaces

: ISO-4113 Calibrating oil

: VE4/9F2300R432-4 Injection pump

: 0 460 494 285 Type number

Customer Part-No. :

Customer-specific information

Customer : VW

: 028.D (1.9L.) B3 Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer: 40.00...48.00 : 42.00...50.00 Electronically

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Openina

bar: 147.00...150.00 Pressure

Test ini. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Lenath

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1250 Speed

Setting value mm: 3.70...4.10

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1250 Speed

Setting value bar: 5.50...6.10

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 1250 Speed

Del. quantity cm3/ 1000s.: 42.00...43.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2.5 1000s.: (3.0)

Residual-Delivery Setting

1/min: 575

Del. quantity cm3/

1000s.: 5.50...6.50

Shutoff

electromagnet Volt: 12

Full-load speed regulation

1/min: 2600 Speed

Del. quantity cm3/

1000s.: 10.00...14.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100 bel. quantity cm3/: 35.00...65.00 mind 1000s.: 35.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1250 Speed

cm3/Inj.-qty.

difference 1000s.: 4.00...10.00

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV)

1/min: 1250 1.Speed

TD-travel

mm: 0.60...0.80 difference

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 2000 2nd speed

mm: 6.60...7.40 TD travel

mm: (6.30...7.70)

Shutoff	+ Del. quantity cm3/: 21.5031.50
electromagnet Volt: 12	+ 1000s.: (20.5032.50)
3rd speed 1/min: 1250	+ 9th speed 1/min: 2200
TD travel mm: 3.704.10	+ Shutoff
mn: (3.204.60)	+ electromagnet Volt: 12
Shutoff	+ Del. quantity cm3/: 36.7038.70
electromagnet Volt: 12	1000s.: (35.5039.90)
4th speed 1/min: 750	12th speed 1/min: 1250
TD travel mm: 1.602.40	+ Shutoff
mm: (1.302.70)	+ electromagnet Volt: 12
Shutoff	+ Del. quyntity cm3/: 42.0043.00
electromagnet Volt: 12	1000s.: (40.3044.70)
	15th speed 1/min: 750 Shutoff
Supply-pump pressure characteristic:	+ electromagnet Volt: 12
1st speed 1/min: 750	Del. quantity cm3/: 33.7036.70
	10008:: (32.2038.20)
Supply-pump pressure bar: 4.304.90	20th speed 1/min: 400
pressure bar: 4.304.90 Shutoff	Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
2nd speed 1/min: 1250	- Del. quantity cm3/: 35.5041.50
Suppty-pump	10005.: (33.0044.00)
pressure bar: 5.506.10	
Shutoff	+ Mech. shutoff:
electromagnet Volt: 12	+
3rd speed 1/min: 2200	+ Electr. shutoff:
Supply-pump	+
pressure bar: 7.708.30	1 1st speed 1/min: 450
Shutoff	+ Del. quantity cm3/: 0.003.00
electromagnet Volt: 12	1000s.: (0.003.00)
	† Shutoff
Overlow quantity at overflow valve:	† electromagnet volt:
	+
1st speed 1/min: 400	† Idle delivery:
Shutoff	†
electromagnet Volt: 12	† According to the control of the co
Overflow : 41.7083.40	† Damper set qty.:
quantity cm3/10s: (27.8097.30)	‡ 2nd speed 1/min: 1000
2nd speed 1/min: 2200	+ 2nd speed 1/min: 1000 + Shutoff
Shutoff	+ electromagnet Volt: 12
electromagnet Volt: 12 Overflow: 55.60138.90	Del. quantity cm3/: 11.0013.00
Overflow : 55.60138.90 guantity cm3/10s: (41.70152.90)	1000s.: (8.0016.00)
qualities clib/105. (41.701)2.707	1000011101001
Delivery-quant. and breakaway char.:	+ LFG-setting:
beervery quarter and breakaway areas	+ solidale con carcassa:
	Idle delivery:
2nd speed 1/min: 2750	+
Shutoff	+ 1st speed 1/min: 450
electromagnet Volt: 12	+ Shutoff
Del. quantity cm3/: 0.006.00	+ electromagnet Volt: 12
1000s.: (0.006.00)	+ Del. quantity cm3/: 9.0011.00
5th speed 1/min: 2600	† 1000s.: (6.0014.00)
Shutoff	†
electromagnet Volt: 12	+ High Idle:
Del. quantity cm3/: 10.0014.00	† 6 · · · · · · · · · · · · · · · · · ·
1000s.: (8.0016.00)	+ 1st speed 1/mi: 500
8th speed 1/min: 2500	+ Shutoff
Shutoff	+ electromagnet Volt: 12
electromagnet Volt: 12	+

Del. quantity cm3/: 9.00...11.00 1000S.: (6.00...14.00) Shutoff electromagnet Volt: 12 Del. quantity cm3/: 27.00...29.00 1000s.: (25.00...31.00) Residual: Automatic starting fuel delivery: 1/min: 575 1.Rotacao Shutoff 1/min: 180 electromagnet Volt: 12 1st speed Del. quantity cm3/: 5.50...6.50 1000s.: (4.00...8.00) Shutoff electromagnet Volt: 12 Del. quantity cm3/: 35.00...75.00 1000s.: (35.00...75.00) 1/min: 525 2rd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 7.30...9.30 1000S.: (5.80...10.80) 1/min: 380 2nd speed Shutoff electromagnet Volt: 12
Del. quantity cm3/: 30.00...50.00
1000S.: (30.00...50.00) Load-dependent start of delivery: Inj.-gty.dif.measurement: 1/min: 100 4th speed 1/min: 1250 1st speed Inj.-qty. cm3/ : 4.00...10.00# difference 1000S: (3.00...11.00) Shutoff electromagnet Volt: 12 Del. quantity cm3/: 35.00...65.00 1000S.: (35.00...65.00) Shutoff electromagnet Volt: 12 1/min: 1250 cm3/: +0.00...3.00\* 3rd speed Shutoff electromagnet: Inj.—qty. difference 1000S.: +(0.00...3.00) Cut-in Shutoff electromagnet Volt: 12 min voltage : 10.0 : 12.0 Rated voltage TD-travel dif.measurement: correttore anticipo iniezione (SV): Mounting and assembly dimensions: 1st speed 1/min: 1250 : 0.60...0.80 # Designation TD-travel difference mm: 3.2...3.4 mn: (0.60...0.80)KF mm: 5.1...5.5 Shutoff mm: 1.1...1.5 MS electromagnet Volt: 12 3rd speed 1/min: 1250 mm: 2.9 SVS max. : 1.80...2.20 \* TD-travel mm: (1.50...2.50) On initial measurement, screw in difference residual-quantity adjusting screw 2 mm. Shutoff electromagnet Volt: 12 Following pump adjustment, screw out residual-quantity adjusting screw 2 mm. SP press.—dif.measurement: pompa di mandata (FP): 1st speed 1/min: 1250 Supply pump-: 1.10...1.50 \* pressure bar: (0.90...1.70) difference Shutoff electromagnet Volt: 12 Part-load del.at 3rd inj.-qty. terza fermo della portata stop (EGR set) scarico) (ARF) gaz d'échappement-ARF)

1st speed

1/min: 1000

Note inst. in remarks column

Test scheet

: 15.04.92 Edition replaces

: ISO-4113 Calibrating oil

: VE4/9F2050R442 Injection pump : 0 460 494 292 Type number

Customer Part-No. :

Customer-specific information : IVECO-SOFIM Customer

: 8144.97.2400 Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.60

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 683 901 000 assembly

Opening |

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery

Indicator setting Piston stroke mm: 1.0 : A Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1000 Speed Charge press. hPa: 1000 Setting value mm: 2.00...2.40

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1000 Speed Charge press hPa: 1000

Setting value bar: 4.70...5.30 Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1200 Charge press. hPa: 1000

Del. quantity cm3/ 1000s.: 63.50...64.50

Shutoff

electromagnet Volt: 12 cm3/: 3.0Dispersion 1000s.: (3.0)

Full-load del. w/out charge press.:

1/min: 500 Speed

Del. quantity cm3/

1000s.: 40.00...41.00

Shutoff

electromagnet Volt: 12

Residual-Delivery Setting

1/min: 550 Speed

Del. quantity cm3/ 1000s.: 1.00...5.00

Shutoff

electromagnet Volt: 12

Full-load speed regulation

1/min: 2400 Charge press hPa: 1000 Del. quantity cm3/ 1000s.: 31.00...37.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 50.00...74.00 mind 1000s.: 50.00

mind

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1000 Charge press hPa: 1000 Inj.-qty. cm3/

difference 1000s.: 19.00...25.00

K07

Shutoff	Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
TD-travel dif.measurement	
correttore anticipo iniezione (SV)	Overlow quantity at overflow valve:
1. Speed 1/min: 1000	·
Charge press hPa: 1000	1st speed 1/min: 500
TD-travel	Shutoff
difference mm: 0.700.90	electromagnet Volt: 12
Shutoff	Overflow 41.7083.40
electromagnet Volt: 12	Overflow : 41.7083.40 guantity cm3/10s: (26.7098.40)
etectrollagnet vott. 12	2nd speed 1/min: 2050
Inspection when the transifications	Charge press. hPa: 1000
Inspection pump test specifications	Shutoff
Test specifications in parentheses	
T	electromagnet Volt: 12 Overflow : 55.60139.00
Timing-device characteristic:	OVERTION : 33.00137.00
†	quantity cm3/10s: (40.60153.00)
2nd speed 1/min: 1800 +	~ 10
Charge press hPa: 1000 +	Delivery-quant. and breakaway char.:
TD travel mm: 8.008.80 +	
mn: (7.709.10) +	
Shutoff	1nd speed 1/min: 700*
electromagnet Volt: 12	Charge-air pressure-setting
3rd speed 1/min: 1000 +	point hPa: 350
Charge press hPa: 1000	LDA-stroke mm: 4.5
TD travel mm: 2.002.40	Shutoff
mm: (1.702.70)	electromagnet Volt: 12
The state of the s	Del. quantity cm3/: 54.5055.50
Shutoff + 12	10008.: (52.5057.50)
electromagnet Volt: 12	2nd speed 1/min: 2750
5th speed 1/min: 2050	Change mann labor 4000
Charge press. hPa: 1000	Charge press. hPa: 1000
TD travel mm: 9.6010.40	Shutoff
mm: (9.3010.70)	electromagnet Volt: 12
Shutoff	Del. quantity cm3/: 0.003.00
electromagnet Volt: 12	1000\$.: (0.003.00)
6th speed 1/min: 1400 +	5th speed 1/min: 2400
Charge press. hPa: 1000	Charge press. hPa: 1000
TD travel mm: 4.805.60	Shutoff
mm: (4.505.90)	electromagnet Volt: 12
Shutoff	Del. quantity cm3/: 31.0037.00
electromagnet Volt: 12	1000s.: (30.0038.00)
etectionagnet voice. It	9th speed 1/min: 2050
Supply-pump pressure characteristic:	Charge press. hPa: 1000
Supply-bond pressure character iscite.	Shutoff
1-h 1/min. 700	electromagnet Volt: 12
1st speed 1/min: 700	hal minority and/ 42 00 45 00
Charge press. hPa: 1000	Del. quantity cm3/: 62.0065.00
Supply-pump +	1000\$.: (61.3065.70)
pressure bar: 3.504.10 +	12th speed 1/min: 1200
Shutoff	Charge press. hPa: 1000
electromagnet Volt: 12	Shutoff
2nd speed 1/min: 1000	electromagnet Volt: 12
Charge press. hPa: 1000	Del. quyntity cm3/: 63.5064.50
Supply-pump +	1000S.: (62.0066.00)
pressure bar: 4.705.30	18th speed 1/min: 500
Shutoff	Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
	Del. quantity cm3/: 40.0041.00
	1000s.: (38.0043.00)
Charge press. hPa: 1000	10003.1 (30.001.1.43.00)
Supply-pump +	Mach shutoff.
pressure bar: 8.409.00 +	Mech. shutoff:

Electr. shutoff:	† 1st speed 1/min: 1000 † Charge press. hPa: 1000
1st speed	+ TD-travel : 0.700.90 * difference mm: (0.700.90) + Shutoff
Shutoff electromagnet volt: -	electromagnet Volt: 12 2nd speed 1/min: 1000 Charge press. hPa: 1000
Damper set qty.:	+ TD-travel : 1.101.90 ' + difference mm: (1.101.90)
LFG-setting: solidale con carcassa: Idle delivery:	Shutoff electromagnet Volt: 12
1st speed 1/min: 425 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 10.0014.00 1000s.: (9.0015.00)	SP pressdif.measurement: pompa di mandata (FP): 1st speed 1/min: 1000 Charge press. hPa: 1000 Supply pump- pressure : 0.100.30 # difference bar: (0.100.30)
High Idle:	Shutoff + electromagnet Volt: 12
1st speed 1/mi: 500 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 12.0016.00 1000S.: (11.0017.00)	Part-load del.at 3rd injqty. terza fermo della portata stop (EGR set) scarico) (ARF) gaz d'échappement-ARF)
Residual:	Spacing mm: 12.0
1.Rotacao 1/min: 550 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 1.005.00 1000s.: (0.006.00)	1st speed 1/min: 500 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 20.0022.00 1000s.: (18.5023.50)
Load-dependent start of delivery: Injqty.dif.measurement:	Automatic starting fuel delivery:
1st speed 1/min: 1000 Charge press. hPa: 1000 Injqty. cm3/ : 19.0025.00 difference 1000s.: *	1st speed 1/min: 200 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 50.0074.00 1000s.: (50.0074.00)
Shutoff electromagnet Volt: 12 2nd speed  1/min: 1000 Charge press. hPa: 1000 Injqty. cm3/: 19.0021.00	2nd speed 1/min: 350 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 36.0044.00 1000s.: (36.0044.00)
difference 1000s.: # Shutoff electromagnet Volt: 12 4th speed 1/min: 1000	4th speed 1/min: 100
4th speed 1/min: 1000 Charge press. hPa: 1000 Injqty. cm3/: +2.008.00 difference 1000S.: '	electromagnet Volt: 12 Del. quantity cm3/: 50.0074.00 1000s.: (50.0074.00)
electromagnet Volt: 12	Shutoff electromagnet:
TD-travel dif.measurement: correttore anticipo injezione (SV):	Cut-in in voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

mm: -

K KF mm: 5.6...6.0 mm: 1.1...1.5 mm: 4.5 MS

LDA stroke

Remarks:

\* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

Add 12 mm spacer at 3rd part-load-quantity stop.

Note inst. in remarks column

Test scheet

: 13.04.92 Edition

replaces

Calibrating oil : ISO-4113

: VE4/9F2350R452 Injection pump Type number : 0 460 494 299

Customer Part-No. :

Customer-specific information

Customer : RNUR

Engine : J8S - 784

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer : 40.00...48.00 : 42.00...50.00 Electronically

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 022 assembly

Openina

bar: 130.00...133.00 Pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00

mm: 450 x Length

Start of delivery Prestroke mm: -

(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing device travel

1/min: 1125 Speed

Setting value mm: 2.60...3.00

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1125 Speed

K11

Setting value bar: 4.20...4.80

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 1125 Speed

Del. quantity cm3/

1000s.: 35.20...36.20

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2.5 Dispersion

1000s.: (3.0)

Residual-Delivery Setting

1/min: 500 Speed

Del. quantity cm3/

1000s.: 2.00...6.00

Shutoff

electromagnet Volt: 12

Full-load speed regulation

1/min: 2500 Speed

Del. quantity cm3/

1000s.: 20.00...26.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100 Del. quantity cm3/: 52.00...92.00 mind 1000S.: 52.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1125 Speed

cm3/Inj.-qty.

difference 1000S.: 11.00...15.00 #

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV)
1. Speed 1/min: 1125 1.Speed

TD-travel

mm: 0.50...0.70 # difference

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 2000 2nd speed

TD travel mm: 7.107.90 mm: (6.808.20)	+ Shutoff + electromagnet Volt: 12
Shutoff	- Dal. quantity cm3/: 20.0026.00
electromagnet Volt: 12	1000s.: (19.0027.00) + 9th speed 1/min: 2250
3rd speed 1/min: 1125	+ 9th speed 1/min: 2250 + Shutoff
TD travel mm: 2.603.00 mm: (2.103.50)	+ electromagnet Volt: 12
Shutoff	Del. quantity cm3/: 34.5036.50 1000s.: (33.2037.80)
electromagnet Volt: 12	† 1000\$.: (33.2037.80)
4th speed 1/min: 800	+ 10th speed 1/min: 1750 + Shutoff
TD travel mm: 0.701.50 mm: (0.401.80)	+ electromagnet Volt: 12
Shutoff	Del. quantity cm3/: 34.1036.10
electromagnet Volt: 12	10005.: (32.8037.40)
	+ 12th speed 1/min: 1125
Supply-pump pressure characteristic:	+ Shutoff + electromagnet Volt: 12
1st speed 1/min: 800	Del. quyntity cm3/: 35.2036.20
Supply-pump	10003.: (33.4038.00)
pressure bar: 3.103.70	+ 20th speed 1/min: 800
Shutoff	+ Shutoff
electromagnet Volt: 12 2nd speed   1/min: 1125	electromagnet Volt: 12 Del. quantity cm3/: 32.9035.90
2nd speed 1/min: 1125 Supply-pump	10008:: (32.1036.70)
pressure bar: 4.204.80	+
Shutoff	+ Mech. shutoff:
electromagnet Volt: 12	Electr. shutoff:
3rd speed 1/min: 2000 Supply-pump	Etectr. shutorr.
pressure bar: 6.507.10	1st speed 1/min: 400
Shutoff	<pre>Del. quantity cm3/: 0.003.00</pre>
electromagnet Volt: 12	10008.: (0.003.00)
Applications of avertical valvas	+ Shutoff + electromagnet volt: -
Overlow quantity at overflow valve:	- etecti diagnet vott.
1st speed 1/min: 800	- Damper set qty.:
Shutoff electromagnet Volt: 12	LFG-setting:
Overflow : 41.7083.40	solidale con carcassa:
quantity cm3/10s: (26.7098.40)	Idle delivery:
2nd speed 1/min: 2250	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Shutoff	+ 1st speed 1/min: 400 + Shutoff
electromagnet Volt: 12 Overflow: 55.60139.00	electromagnet Volt: 12
quantity cm3/10s: (40.60153.00)	<pre>pel. quantity cm3/: 6.0010.00</pre>
•	† 1000s.: (4.0012.00)
Delivery-quant. and breakaway char.:	+ + High Idle:
	T might tate.
2nd speed 1/min: 2750	1st speed 1/mi: 500
Shutoff	+ Shutoff
electromagnet Volt: 12	electromagnet Volt: 12 Del. quantity cm3/: 8.5012.50
Del. quantity cm3/: 0.005.00 1000S.: (0.005.00)	1000S.: (6.5014.50)
3rd speed 1/min: 2650	+
Shutoff	Residual:
electromagnet Volt: 12	1 Patrona 1/2:22 500
Del. quantity cm3/: 2.5010.50	+ 1.Rotacao 1/min: 500 + Shutoff
1000S.: (1.5011.50)  5th speed 1/min: 2500	+ electromagnet Volt: 12

Del. quantity cm3/: 2.00...6.00 1000\$:: (2.00...6.00) Load-dependent start of delivery: Inj.-qty.dif.measurement: 1/min: 1125 1st speed Inj.-qty. cm3/ : 10.0...12.0 \*difference 1000s.: (10.00...12.00) Shutoff electromagnet Volt: 12
3rd speed 1/min: 1125
Inj.-qty. cm3/: 11.0...15.0 # difference 1000s.: (11.00...15.00) Shutoff electromagnet Volt: 12 1/min: 1125 5th speed Inj.-qty. cm3/: 2.00...8.00 ' difference 1000s.: (2.00...8.00) Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1/min: 1125 ist speed : 0.50...0.70 # TD-traveL mm: (0.50...0.70) difference Shutoff electromagnet Volt: 12 3rd speed 1/min: 1125 : 1.10...1.50 ' TD-travel mm: (1.00...1.60) difference Shutoff electromagnet Volt: 12 SP press.-dif.measurement: pompa di mandata (FP): 1st speed 1/min: 1125 Supply pump-: 0.10...0.30 \* pressure bar: (0.10...0.30) difference Shutoff electromagnet Volt: 12 Part-load del.at 3rd inj.-qty. terza fermo della portata stop (EGR set) scarico) (ARF) gaz d'échappement-ARF) mm: 12.0 Spacing 1/min: 1000 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 23.50...24.50 1000s.: (21.50...26.50)

Automatic starting fuel delivery:

1/min: 210

Shutoff electromagnet Volt: 12 Del. quantity cm3/: 45.00...85.00 1000s.: (45.00...85.00) 2nd speed 1/min: 310 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 25.00...45.00 1000S.: (25.00...45.00) 1/min: 100 4th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 52.00...92.00 1000s.: (52.00...92.00) Shutoff electromagnet: Cut-in min voltage : 10.0 : 12.0 Rated voltage Mounting and assembly dimensions: Designation mm: 3.2...3.4 mm: 5.3...5.7 K KF mm: 1.3...1.7 MS SVS max. mm: 3.0

Remarks:

For adjustment of switching point (EGR valve), include 12.0 mm spacer at third fuel-delivery stop.

On initial measurement, screw in residual-quantity adjusting screw 1 mm.

Screw out residual-quantity adjusting screw 1 mm after setting pump.

1st speed

Note inst. in remarks column

Test scheet : REN : 13.04.92 Edition

replaces

: ISO-4113 Calibrating oil

: VE4/9F2350R452-1 Injection pump : 0 460 494 300 Type number

Customer Part-No. :

Customer-specific information

Customer

: RNUR

Engine

: J8S - 784 CA

TEST BENCH REQUIREMENTS

Calibrating oil return temo.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

bar: 130.00...133.00 Pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450 x Length

Start of delivery Prestroke mn: -(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel

Speed 1/min: 1125

Setting value mm: 2.60...3.00

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1125 Speed

**K14** 

Setting value bar: 4.20...4.80

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1125

Del. quantity cm3/ 1000s.: 35.20...36.20

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2.5 1000s.: (3.0)

Residual-Delivery Setting

1/min: 500 Speed

Del. quantity cm3/

1000s.: 2.00...6.00

Shutoff

electromagnet Volt: 12

Full-load speed regulation

1/min: 2500 Speed

Del. quantity cm3/ 1000s.: 20.00...26.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 52.00...92.00 mind 1900s.: 52.00

Shucorf

electromagnet Volt: 12

Load-dependent start of delivery:

Ini.-gty.dif.measurement:

1/min: 1125 Speed

cm3/

Inj.-qty. cm3/ difference 1000S.: 11.00...15.00 #

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV)

1/min: 1125 1.Speed

TD-travel

difference

mm: 0.50...0.70 #

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 2000 2nd speed

TD travel mm:	7.107.90	+ Shutoff
mn:	(6.808.20)	+ electromagnet Volt: 12
Shutoff		+ Del. quantity cm3/: 20.0026.00
elactromagnet Volt:	12	10008.: (19.0027.00)
3rd speed 1/min:	1125	+ 9th speed 1/min: 2250
TD travel mm:	2.603.00	+ Shutoff
TO CTOVEC THIS.	(2.103.50)	electromagnet Volt: 12
Shutoff	(2.105.50)	I had quantity cm3/: 34 50 36 50
	42	Del. quantity cm3/: 34.5036.50 1000s.: (33.2037.80)
electromagnet Volt:	12	404h amand 4/min 1750
4th speed 1/min:	800	10th speed 1/min: 1750
TD travel mm:	0.701.50	† Shutoff
	(0.401.80)	+ electromagnet Volt: 12
Shutoff		+ Del. quantity cm3/: 34.1036.10
electromagnet Volt:	12	1000s.: (32.8037.40)
•		12th speed 1/min: 1125
Supply-pump pressur	e characteristic:	+ Shutoff
action of house by account		+ electromagnet Volt: 12
1st speed 1/min:	200	Del. quyntity cm3/: 35.2036.20 10005.: (33.4038.00)
	880	10005 • (33, 40, 38,00)
Supply-pump	7 10 7 70	20th speed 1/min: 800
	3.103.70	T Chitaff
Shutoff	42	+ Shutoff
electromagnet Volt:	12	+ electromagnet Volt: 12
2nd speed 1/min:	1125	Del. quantity cm3/: 32.9035.90
Supply-pump		1000s.: (32.1036.70)
pressure bar:	4.204.80	+
Shutoff		+ Mech. shutoff:
electromagnet Volt:	12	1
3rd speed 1/min:	2000	+ Electr. shutoff:
Supply-pump	2000	
	6.507.10	1st speed 1/min: 400
	0.50	Del. quantity cm3/: 0.003.00
Shutoff	43	10008: (0.003.00)
electromagnet Volt:	12	
	<i>a</i> 1	† Shutoff
Overlow quantity at	overtiow valve:	+ electromagnet volt: -
		†
1st speed 1/min:	800	+ Damper set qty.:
Shutoff		+
electromagnet Volt:	12	+ LFG-setting:
Overflow :	41.7083.40	+ solidale con carcassa:
quantity cm3/10s:	(26.7098.40)	+ Idle delivery:
2nd speed 1/min:	2250	
Shutoff		+ 1st speed 1/min: 400
electromagnet Volt:	12	+ Shutoff
Overflow :	55.60139.00	electromagnet Volt: 12
		Del. quantity cm3/: 6.0010.00
quantity cm3/10s:	(40.60153.00)	1000c . (100 12 00)
		10005.: (4.0012.00)
Delivery-quant. and	l breakaway char.:	
		† High Idle:
		†
2nd speed 1/min:	2750	+ 1st speed 1/mi: 500
Shutoff		+ Shutoff
electromagnet Volt:	12	+ electromagnet Volt: 12
Del. quantity cm3/:	0.005.00	Del. quantity cm3/: 8.5012.50
1000	(0.005.00)	1000s.: (6.5014.50)
	2450	1,0000 (0.3014130)
	, 2000	T Residual:
Shutoff	. 43	T residuat.
electromagnet Volt	16	1 000000 1/ 500
Del. quantity cm3/:	2.5010.50	1. Rotação 1/min: 500
	: (1.5011.50)	+ Shutoff
5th speed 1/min:	: 2500	+ electromagnet Volt: 12

Del. quantity cm3/: 2.00...6.00 1000s.: (2.00...6.00) Load-dependent start of delivery: Ini.—aty.dif.measurement: 1/min: 1125 1st speed Inj.-qty. cm3/ : 10.0...12.0 \* difference 1000s.: (10.00...12.00) Shutoff electromagnet Volt: 12 3rd speed 1/min: 1125 Inj. qty. cm3/: 11.0...15.0 # difference 1000S.: (11.00...15.00) Shutoff electromagnet Volt: 12 5th speed 1/min: 1125 cm3/: 2.00...8.00 ' Inj.-aty. difference 1000s.: (2.00...8.00) Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1/min: 1125 1st speed TD-travel : 0.50...0.70 # mm: (0.50...0.70) difference Shutoff electromagnet Volt: 12 3rd speed 1/min: 1125 : 1.10...1.50 ' TD-travel mm: (1.00...1.60) difference Shutoff electromagnet Volt: 12 SP press.-dif.measurement: pompa di mandata (FP): 1/min: 1125 1st speed Supply pump-: 0.10...0.30 \* pressure bar: (0.10...0.30) difference Shutoff electromagnet Volt: 12 Part-load del.at 3rd inj.-qty. terza fermo della portata stop (EGR set) scarico) (ARF) gaz d'échappement-ARF) mm: 12.0 Spacing 1/min: 1000 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 23.50...24.50 1000s.: (21.50...26.50) Automatic starting fuel delivery:

1/min: 210

Shutoff electromagnet Volt: 12 Del. quantity cm3/: 45.00...85.00 1000s.: (45.00...85.00) 1/min: 310 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 25.00...45.00 1000s.: (25.00...45.00) 1/min: 100 4th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 52.00...92.00 1000s.: (52.00...92.00) Shutoff electromagnet: Cut-in : 10.0 min voltage : 12.0 Rated voltage Mounting and assembly dimensions:

Designation mm: 3.2...3.4 K mm: 5.3...5.7 KF mm: 1.3...1.7 MS SVS max. mm: 3.0

Remarks:

For adjustment of switching point (EGR valve), include 12.0 mm spacer at third fuel-delivery stop.

On initial measurement, screw in residual-quantity adjusting screw 1 mm.

Screw out residual-quantity adjusting screw 1 mm after setting pump.

1st speed

Note inst. in remarks column

Test scheet : VWW

: 13.04.92 Edition

replaces

Calibrating oil

: ISO-4113

Injection pump

: VE4/9F2100R471

Type number

: 0 460 494 308

Customer Part-No.:

Customer-specific information

Customer

Engine

: 1,9 L UD

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil

•0 return temp.

with thermometer: 40.00...48.00

Electronically

: 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

assembly

: 1 688 901 000

Opening |

Pressure

bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00

x Wall thickness : 2.00

x Length

mm: 840

Start of delivery block

Piston stroke mm: -

mm: -

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1250

Setting value mm: 3.70...4.10

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1250 Speed

Setting value bar: 5.30...5.90

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250

Del. quantity cm3/ 1000s.: 42.00...43.00

Shutoff

electromagnet Volt: 12

Dispersion cm3/: 2.5 1000s.: (3.0)

Residual-Delivery Setting

1/min: 550

Del. quantity cm3/ 1000s.: 5.50...6.50

Shutoff

electromagnet Volt: 12

Full-load speed regulation

1/min: 2400 Speed

Del. quantity cm3/

1000s.: 12.00...16.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 40.00...90.00 mind 1000s.: 40.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1250 Speed

Inj.-qty. cm3/

difference 1000S.: 7.00...13.00

Shutoff

electromagnet Volt: 12

TD-travel dif.measurement

correttore anticipo iniezione (SV) 1.Speed 1/min: 1250

TD-travel

mm: 0.90...1.10 difference

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1700 TD travel mm: 5.60	36.40 <del>}</del>	8th speed 1/min: 2250 Shutoff
	206.80)	electromagnet Volt: 12
Shutoff	†	Del. quantity cm3/: 25.0035.00 1000s.: (24.0036.00)
electromagnet Volt: 12	n Í	9th speed 1/min: 1850
3rd speed 1/min: 1250 TD travel mm: 3.70	J 10 T	Shutoff
TD travel mm: 3.70	104.70)	electromagnet Volt: 12
	104.70)	Del. quantity cm3/: 40.0042.00
Shutoff	_ <del>_</del>	10005.: (38.8043.20)
electromagnet Volt: 12 4th speed 1/min: 750	I	12th speed 1/min: 1250
TD travel mm: 1.10	n 100 I	Shutoff
	702.30)	electromagnet Volt: 12
Shutoff	102.30	Del. quyntity cm3/: 42.0043.00
electromagnet Volt: 12	<u> </u>	1000s.: (40.3044.70)
etetti dilagret vott. 12	1	20th speed 1/min: 750
Supply-pump pressure cha	aracteristic:	Shutoff
Supply- pump pressure cha	aracter iscite.	electromagnet Volt: 12
1st speed 1/min: 750	1	Del. quantity cm3/: 33.5036.50
Supply-pump	1	1000s.: (32.0038.00)
pressure bar: 3.80	04.40	21th speed 1/min: 450
Shutoff	+	Shutoff
electromagnet Volt: 12	1	electromagnet Volt: 12
2nd speed 1/min: 1250	n 🗼	Del. quantity cm3/: 31.5037.50
Supply-pump		Del. quantity cm3/: 31.5037.50 1000s.: (29.0040.00)
pressure bar: 5.30	05.90	
Shutoff	+	Mech. shutoff:
electromagnet Volt: 12	+	
3rd speed 1/min: 1700	0 +	Electr. shutoff:
Supply-pump	+	
pressure bar: 6.60	07.20	1st speed 1/min: 425
Shutoff	+	Dal. quartity cm3/: 0.003.00
electromagnet Volt: 12	÷	1000s.: (0.003.00)
	<del>†</del>	Shutoff
Overlow quantity at over	erflow valve:	electromagnet volt: -
	+	
1st speed 1/min: 750	) †	Damper set qty.:
Shutoff	†	
electromagnet Volt: 12	<b>T</b>	LFG-setting:
Overflow : 41.7	7083.40	solidale con carcassa:
quantity cm3/10s: (27.	(28097.30)	Idle delivery:
2nd speed 1/min: 1850	ν †	1 th mand 1/mins 1/25
Shutoff	Ť	1st speed 1/min: 425
electromagnet Volt: 12	(0 170 00	Shutoff electromagnet Volt: 12
Overflow : 55.0 quantity cm3/10s: (41.	60138.90	Del. quantity cm3/: 7.009.00
quantity cms/fus: (4)	I.70132.30)	1000s.: (4.0012.00)
Daldyams around and broa	akayay chan · I	10003 (4.0012.00)
Delivery-quant. and brea	eakaway unar T	High Idle:
	I	rightute.
2nd speed 1/min: 2650	I	1st speed 1/mi: 500
2nd speed 1/min: 2650 Shutoff	$\Gamma$	Shutoff
electromagnet Volt: 12	1	electromagnet Volt: 12
Del. quantity cm3/: 0.0	n .3.m 🗼	Del. quantity cm3/: 7.009.00
10008.: (0.0	.003.00)	1000s.: (4.0012.00)
5th speed 1/min: 240		
Shutoff	1	Residual:
electromagnet Volt: 12	+	
Del. quantity cm3/: 12.	.0016.00	1.Rotacao 1/min: 550
1000s.: (10	0.0018.00)	
	•	

mm: 12.0 Spacing Shutoff electromagnet Volt: 12 Del. quantity cm3/: 5.50...6.50 1000s.: (4.00...8.00) 2nd speed 1/min: 515 1/min: 1000 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 27.CD...29.00 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 5.50...7.50 1000s.: (4.00...9.00) 1000s.: (25.00...31.00) Automatic starting fuel delivery: 1/min: 180 1st speed Load-dependent start of delivery: Shutoff Inj.-qty.dif.measurement: electromagnet Volt: 12 Del. quantity cm3/: 40.00...90.00 1000s.: (40.00...90.00) 1st speed 1/min: 1250 Inj.-qty. cm3/ : 7.00...13.00 difference 1000s.: (6.00...14.00)
3rd speed 1/min: 1250 2nd speed 1/min: 380 cm3/: 6.00...8.00 # Shutoff Inj.-qty. electromagnet Volt: 12 Del. quantity cm3/: 25.00...45.00 1000s.: (25.00...45.00) difference 1000S.: (6.00...8.00) Shutoff electromagnet Volt: 12 5th speed 1/min: 1250 1/min: 100 4th speed cm3/: +0.00...3.00\* Inj.-aty. difference 1000s.: +(0.00...3.00) Shutoff electromagnet Volt: 12 Shutoff Del. quantity cm3/: 40.00...90.00 electromagnet Volt: 12 1000\$.: (40.00...90.07) TD-travel dif.measurement: Shutoff electromagnet: correttore anticipo iniezione (SV): 1st speed 1/min: 1250 : 0.90...1.10 # Cut-in TD-travel mm: (0.90...1.10) min voltage : 10.0 difference : 12.0 Rated voltage Shutoff electromagnet Volt: 12 3rd speed 1/min: 1250 Mounting and assembly dimensions: : 1.30...1.70 \* TD-travel mm: (0.90...2.10) Designation difference mii: 3.2...3.4 Shutoff mm: 5.1...5.5 mm: 1.2...1.4 KF electromagnet Volt: 12 MS SP press.-dif.measurement: Remarks: pompa di mandata (FP): 1/min: 1250 1st speed For adjustment of switching point Supply pump-(EGR valve), include 12.0 mm spacer : 0.70...1.10 \* pressure at third fuel-delivery stop. bar: (0.50...1.30) difference Shutoff electromagnet Volt: 12 2nd speed 1/min: 1250 On initial measurement, screw in Supply pump-: 0.10...0.30 # residual-quantity adjusting screw 2 mm. pressure bar: (0.10...0.30) difference Following pump adjustment, screw out Shutoff residual-quantity adjusting screw 2 mm. electromagnet Volt: 12 Part-load del.at 3rd inj.-qty. terza fermo della portata stop (EGR set)

scarico) (ARF)

gaz d'échappement-ARF)

Note inst. in remarks column

Test scheet

: 15.04.92 Edition

replaces

Calibrating oil : ISO-4113

: YE4/9F2150R474-1 Injection pump

: 0 460 494 313 Type number

Customer Part-No. :

Customer-specific information

Customer

: XUD11ATE-L/BVA Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil •c return temp.

with thermometer: 40.00.48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening |

bar: 130.00...133.00 Pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00

mm: 450 x Length

Start of delivery

Indicator setting

Piston stroke mm: 0.3 Outlet | : A

Injection-pump setting values

Test specifications in parentheses

Timing-device travel

1/min: 1250 Charge press. hPa: 1000

Setting value mm: 2.30...2.70

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1250 Speed Charge press hPa: 1000

Setting value bar: 5.00...5.60

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250 Charge press. hPa: 1000

Del. quantity cm3/ 1000s.: 61.00...62.00

Shutoff

electromagnet Volt: 12 cm3/: 2.5 Dispersion

1000s.: (2.5)

Full-load del. w/out charge press.:

1/min: 500 Speed

Del. quantity cm3/

1000s.: 42.00...43.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2.5

1000s.: (2.5)

Residual-Delivery Setting

1/min: 550 Speed

Del. quantity cm3/ 1000S.: 2.50...3.50

Shutoff

electromagnet Volt: 12

Full-load speed regulation

1/min: 2250 Speed Charge press hPa: 1000

Del. quantity cm3/ 1000s.: 49.00...55.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 70.00...80.00 mind 1000s.: 70.00

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000	+ Charge-air pressure-setting
Charge press hPa: 1000	+ point hPa: 400
TD travel mm: 5.506.30	+ LDA-stroke mm: 7.1
15 30 4 40)	Shutoff
mm: (5.206.60)	
Shutoff	+ electromagnet Volt: 12
electromagnet Volt: 12	+ Del. quantity cm3/: 56.0057.00
3rd speed 1/min: 1250	4 1000s.: (53.5059.50)
	+ 2nd speed 1/min: 2700
	Change proof hPat 1000
TD travel mm: 2.302.70	+ Charge press. hPa: 1000
mm: (2.003.00)	+ Shutoff
Shutoff	+ electromagnet Volt: 12
electromagnet Volt: 12	+ Del quantity cu3/: 5.0011.00
4th speed 1/min: 1000	10005.: (4.0012.00)
Charge press hPa: 1000	+ 3rd speed 1/min: 2400
TD travel mm: 0.901.70	+ Charge press. hPa: 1000
mm: (0.602.00)	+ Shutoff
Shutoff	+ electromagnet Valt: 12
electromagnet Volt: 12	+ Del. quantity cm3/: 33.5040.50
etecti Oliagnet vott. 12	10005.: (33.0041.00)
Supply-pump pressure characteristic:	+ 5th speed 1/min: 2250
	+ Charge press. hPa: 1000
1st speed 1/min: 1000	+ Shutoff
Charge press. hPa: 1000	+ electromagnet Volt: 12
Cimple press. Illa. 1000	Del. quantity cm3/: 49.0055.00
Supply-pump	10008:: (48.0056.00)
pressure bar: 4.304.90	10005.: (40.0030.00)
Shutoff	+ 9th speed 1/min: 2000
electromagnet Volt: 12	+ Charge press. hPa: 1000
2nd speed 'i/min: 1250	+ Shutoff
Change apone hPa: 1000	electromagnet Volt: 12
Charge press. hPa: 1000	The muentity on 7/2 55 00 58 00
Supply-pump	Del. quantity cm3/: 55.0058.00
pressure bar: 5.005.60	1000\$.: (54.2058.80)
Shutoff	10th speed 1/min: 1000
electromagnet Volt: 12	+ Charge press. hPa: 1000
3rd speed 1/min: 2000	+ Shutoff
	electromagnet Volt: 12
	Del. quantity cm3/: 60.5063.50
Supply-pump	T Det. quantity (1157, 00.5005.50
pressure bar: 7.107.70	1000s.: (59.5064.50)
Shutoff	12th speed 1/min: 1250
electromagnet Volt: 12	Charge press. hPa: 1000
	+ Shutoff
Overlow quantity at overflow valve:	electromagnet Volt: 12
over tow quantity at over itow valve.	Del. quyntity cm3/: 61.0062.00
4	40000 (50 30 (7 90)
1st speed 1/min: 500	1000s.: (59.2063.80)
Charge press. hPa: -	1 13th speed 1/min: 500
Shutoff	+ Charge press. hPa: -
electromagnet Volt: 12	+ Shutoff
Overflow : 41.7083.40	+ electromagnet Volt: 12
0/EFT(0W . 41,7003,40	Tool graphity on 7/2 /2 /2 /3 /3 /4
quantity cm3/10s: (26.7098.40)	+ Del. quantity cm3/: 42.0043.00
2nd speed 1/min: 2000	10005.: (40.2044.80)
Charge press. hPa: -	+ 20th speed 1/min: 500
Shutoff	+ Charge press. hPa: 1000
electromagnet Volt: 12	+ Shutoff
Overflow : 55.60139.00	+ electromagnet Volt: 12
UVELLEUW . JJ. OU (J7. OU)	Del. quantity cm3/: 60.0063.00
quantity cm3/10s: (40.60153.00)	T DEL. QUARTETLY CIRCLE CO. 00. 1/ 00.
	† 1000s.: (59.0064.00)
Delivery-quant. and breakaway char.:	+
• •	+ Mech. shutoff:
	+ Mech. Abstellung:
1nd speed 1/min: 750*	1
1nd speed 1/min: 750*	1st speed 1/min: 2000

Charge press. hPa: 1000 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: 12 Electr. shutoff: 1000s.: (0.00...3.00) Shutoff electromagnet volt: -Damper set qty.: LFG-setting: solidale con carcassa: Idle delivery: 1/min: 325 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 12.00...14.00 1000s.: (10.00...16.00) 2nd speed 1/min: 375 Shutoff electromagnet Volt: 12 Del. quantity cm3/. 5.00...11.00 1000s.: (5.00...11.00) High Idle: 1/mi: 450 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 11.00...13.00 1000s.: (9.00...15.00) Residual: 1/min: 550 1.Rotacao Shutoff electromagnet Volt: 12 Del. quantity cm3/: 2.50...3.50 1000s.: (0.50...5.50) Part-load del.at 3rd inj.-qty. terza fermo della portata stop (EGR set) scarico) (ARF) gaz d'échappement-ARF) mm: 12.0 Spacing 1/min: 1000 1st speed Charge press. hPa: 1000

electromagnet Volt: 12 Del. quantity cm3/: 25.00...26.00 1000s.: (22.50...28.50)

Automatic starting fuel delivery: 1/min: 325 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 37.00...44.00 1000s.: (36.50...44.50) 1/min: 200 3rd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 76.00...78.00 1000s.: (74.50...79.50) 1/min: 100 4th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 70.00...80.00 1000s.: (68.00...82.00) Shutoff electromagnet: Cut-in min voltage : 10.0 : 12.0 Rated voltage Mounting and assembly dimensions: Designation mm: 3.2...3.4 mm: 5.2...5.6 K KF mm: 0.9...1.3 MS mm: 7.1 LDA stroke Remarks: Add 12 mm spacer at 3rd part-load-quantity stop.

K22

Shutoff

Note inst. in remarks column

Test scheet

Edition : 13.04.92

replaces

: ISO-4113 Calibrating oil

: VE4/9F2200R416-1 Injection pump

: 0 460 494 315 Type number

Customer Part-No. :

Customer-specific information

Customer : RNUR

: J8s - 890 Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating oil return temp.

with thermometer : 40.00...48.00 : 42.00...50.00 Electronically

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening

bar: 130.00...133.00 Pressure

Test inj. tubing : 1 680 750 043

Outside diameter : 6.00 x Wall thickness : 2.00

mm: 450 x Length

Start of delivery

Prestroke mm: 0.2

 $(from BDC): \leftarrow 0.02(0.04)$ 

Start of delivery block

Piston stroke mm: 0.3

mm: +-0.02(0.06)

Outlet.

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1400 Speed

Charge press. hPa: 800

Setting value mm: 4.00...4.40

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1400 Speed Charge press hPa: 800

Setting value bar: 5.10...5.70 Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1400 Speed

Charge press. hPa: 800

Del. quantity cm3/ 1000s.: 47.20...48.29

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2.5

1000s.: (3.0)

Full-load del. w/out charge press.:

1/min: 600 Speed

Del. quantity cm3/

1000s.: 37.00...38.00

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425

Del. quantity cm3/

1000s.: 7.00...11.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 2.5 100Cs.: (3.0)

Full-load speed regulation

1/min: 2400 Speed Charge press hPa: 800

Del. quantity cm3/

1000s.: 23.00...29.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100 Del. quantity cm3/: 60.00...100.00

1000s.: 60.00 mind

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:	Charge press. hPa: 800
1	Shutoff
2nd speed 1/min: 2000 +	electromagnet Volt: 12
Charge press hPa: 800	Overflow : 55.60139.00
TD travel mm: 6.207.00	quantity cm3/10s: (40.60153.00)
ma: (6.207.00)	
Shutoff	Delivery-quant. and breakaway char.:
electromagnet Volt: 12	
3rd speed 1/min: 1400	
Charge press hPa: 800 +	1nd speed 1/min: 700*
TD travel mm: 4.004.40 +	Charge-air pressure-setting
mn: (3.504.90) +	point hPa: 200
Shutoff +	Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
4th speed 1/min: 1000 +	Del. quantity cm3/: 41.0042.00
Charge press hPa: 800	1000S.; (38.5044.50)
TD travel mm: 1.902.70	2nd speed 1/min: 2700
mm: (1.603.00)	Charge press. hPa: 800
Shutoff	Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
6th speed 1/min: 1800	Del. quantity cm3/: 0.003.00
Charge press. hPa: 800	1000s.: (0.003.00)
TD travel mm: 5.706.50	3rd speed 1/min: 2500
mm: (5.406.80)	Charge press. hPa: 800
	Shutoff
Shutoff	electromagnet Volt: 12
electromagnet Volt: 12	Del. quantity cm3/: 2.5017.50
Constantina management abanda da d	10005.: (2.5017.50)
Supply-pump pressure characteristic:	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5th speed 1/min: 2400
1st speed 1/min: 600	Charge press. hPa: 800
Charge press. hPa: -	Shutoff 42
Supply-pump +	electromagnet Volt: 12
pressure bar: 2.603.20	Del. quantity cm2/: 23.0029.00
bar: (2.303.50)	1000s.: (22.0030.00)
Shutoff	9th speed 1/min: 2000
electromagnet Volt: 12 +	Charge press. hPa: 800
2nd speed 1/min: 1400	Shutoff
Charge press. hPa: 800	electromagnet Volt: 12
Supply-pump +	Del. quantity cm3/: 44.1045.10
pressure bar: 5.705.70	1000s.: (42.8047.40)
bar: (4.806.00)	12th speed 1/min: 1400
Shutoff	Charge press. hPa: 800
electromagnet Volt: 12	Shutoff
3rd speed 1/min: 2000 +	electromagnet Volt: 12
Charge press. hPa: 800	Del. quyntity cm3/: 47.2048.20
Supply-pump +	1000s.: (45.4050.00)
pressure bar: 6.907.50	18th speed 1/min: 600
bar: (6.607.80)	Charge press. hPa: -
Shutoff	Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
occosi olimaji to vocati va	Del. quantity cm3/: 37.0038.00
Overlow quantity at overflow valve:	1000s.: (34.5040.50)
Over tow quarterly we over rest valeres	20th speed 1/min: 1000
1st speed 1/min: 600	Charge press. hPa: 800
Charge press. hPa: -	Shutoff
Shutoff	electromagnet Volt: 12
	Del. quantity cm3/: 45.6048.60
electromagnet Volt: 12 + Overflow : 41.7083.40 +	1000s.: (44.1050.10)
Overflow : 41.7083.40 +	10003 (44.10)0.107
quantity cm3/10s: (26.7098.40) +	

mm: 5.6...6.0 KF Mech. shutoff: mm: 1.3...1.7 MS SVS max. ma: 4.8 Electr. shutoff: Remarks: 1st speed 1/min: 425 Del. quantity cm3/: 0.00...3.00 • 1000s.: (0.00...3.00) Shutoff electromagnet volt: -Idle delivery: 1/min: 425 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 7.00...11.00 1000s.: (5.00...13.00) cm3/: 2.5 Dispersion 1000s.: (3.0) 1/min: 550 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) 3rd speed 1/min: 450 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 3.00...7.00 1000s.: (1.00...9.00) Automatic starting fuel delivery: 1/min: 180 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40.00...100.00 1000s.: (40.00...100.00) 1/min: 300 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 20.00...40.00 1000s.: (20.00...40.00) 1/min: 100 4th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 60.00...100.00 1000s.: (60.00...100.00) Shutoff electromagnet: Cut-in min voltage : 10.0 : 12.0 Rated voltage Mounting and assembly dimensions: Designation

K25

K

mm: 3.2...3.4

Note inst. in remarks column

Test scheet

: 13.04.92 Edition

replaces

: ISO-4113 Calibrating oil

: VE4/9F2200L243-6 Injection pump

Type number

: 0 460 494 316

Customer Part-No. :

Customer-specific information

Customer

: OPEL

Engine

: 2,3 YD

Power

KW: 54

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating oil

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

assembly

: 1 688 901 000

Opening |

Pressure

bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00

x Wall thickness : 2.00

mm: 840 x Length

Start of delivery block

Piston stroke mm: -

mm: -

Injection-pump setting values

Test specifications in parentheses

Timing-device travel

1/min: 1200 Speed

Setting value mm: 4.30...4.70

AFB/AFB

Volt: 12 valve

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1200 Speed

Setting value bar: 4.00...4.60

KSB/AFB

Volt: 12 valve

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 1200 Speed

Del. quantity cm3/

1000s.: 43.00...44.00

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KSB/AFB Volt: 12 valve

Shutoff

electromagnet Volt: 12 cm3/: 2.5 Dispersion

1000s.: (3.0)

Low-idle speed regulation

1/min: 290 Speed

Del. quantity cm3/ 1000s.: 10.00...14.00

KSB/AFB

Volt: 12 valve

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (3.0)

Full-load speed regulation

1/min: 2450 Speed

Del. quantity cm3/

1000s.: 21.00...27.00

KSB/AFB

Volt: 12 valve

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 47.00...73.00 mind 1000s.: 47.00

KSB/AFB

Volt: 12 Valve

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.meastrement:

Speed 1/min: 1200

Shutoff cm3/ Ini.-qty. difference 1000s.: 4.50...12.50 electromagnet Volt: 12 KSB/AFB Supply-pump pressure characteristic: Volt: 12 valve Shutoff 1/min: 2200 electromagnet Volt: 12 1st speed TD-travel dif.measurement Supply-pump bar: 6.50...7.10 correttore anticipo iniezione (SV) 1.Speed 1/min: 1200 pressure KS8/AFB 1.Speed Volt: 12 valve TD-travel mn: 0.50...0.70 Shutoff difference electromagnet Volt: 12 KSB/AFB 1/min: 1200 Volt: 12 2nd speed valve Supply-pump Shutoff bar: 4.00...4.60 pressure electromagnet Volt: 12 KSB/AFB Volt: 12 Inspection-pump test specifications valve Shutoff Test specifications in parentheses electromagnet Volt: 12 1/min: 800 3rd speed Timing-device characteristic: Supply-pump bar: 3.00...3.60 1/min: 2200 pressure 2nd speed mm: 8.80...9.60 KSB/AFB TD travel Volt: 12 mm: (8.50...9.90) valve Shutoff KSB/AFB electromagnet Volt: 12 Volt: 12 valve 1/min: 600 Shutoff 4th speed electromagnet Volt: 12 Supply-pump bar: 2.40...3.00 1/min: 1200 pressure 3rd speed mm: 4.30...4.70 KSB/AFB TD travel mm: (3.80...5.20)valve Volt: 12 Shutoff KSB/AFB electromagnet Volt: 12 Volt: 12 valve Shutoff Overlow quantity at overflow valve: electromagnet Volt: 12 1/min: 800 4th speed 1/min: 600 /m: 2.10...2.90 1st speed TD travel KSB/AFB Fig.: (1.80...3.20) Volt: 12 valve KSB/AFB Volt: 12 Shutoff valve electromagnet Volt: 12 Shutoff electromagnet Volt: 12 5th speed 1/min: 600 TD travel mm: 0.90...1.70 : 41.70...83.40 Overflow cm3/10s: (26.70...98.40) 1/min: 2200 quantity 2nd speed TD travel KSB/AFB KSB/AFB Volt: 12 Volt: 12 valve valve Shucoff Shutoff electromagnet Volt: 12 Overflow : 55.60...139.00 electromagnet Volt: 12 1/min: 300A 9th speed cm3/10s: (40.60...153.00) mm: 2.70...4.30 quantity TD travel mm: (2.50...4.50) Delivery-quant. and breakaway char.: KSB/AFB Volt: valve Shutotf 1/min: 2700 2nd speed electromagnet Volt: 12 1/min: 800B KSB/AFB 10th speed Volt: 12 mm: 3.10...5.50 valve TD travel Shutof: mm: (3.10...5.50) electromagnet Volt: 12 KSB/AFB valve Volt: -

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Del. quantity cm3/: 0. 1000s.: (0	.003.00 +	Dispersion cm3/: 3.0 1000s.: (3.0)
3rd speed 1/min: 26 KSB/AFB		2nd speed 1/min: 400 KSB/AFB
valve Volt: 12 Shutoff	<b>2</b> ‡	valve Volt: 12 Shutoff
electromagnet Volt: 12	2 +	electromagnet Volt: 12
Del. quantity cm3/: 2.	.0010.00 + 1.0011.00) +	Del. quantity cm3/: 0.002.60 1000s.: (0.002.60)
5th speed 1/min: 24 KSB/AFB		3rd speed 1/min: 320 KSB/AFB
valve Volt: 17	5	valve Volt: 12 Shutoff
electromagnet Volt: 12	2 +	electromagnet Volt: 12
Del. quantity cm3/: 2		Del. quantity cm3/: 5.0011.00
	20.0028.00) +	1000s.: (4.5011.50)
9th speed 1/min: 22		
KSB/AFB	+	Load-dependent start of delivery: Injqty.dif.measurement:
valve Volt: 12	7	ingqty.um.measurement:
Shutoff	a 1"	1st amond 1/mins 1200
electromagnet Volt: 1	C ro 30 ro	1st speed 1/min: 1200
Del. quantity cm3/: 3	5.5038.50	Injqty. cm3/ : 6.008.00 difference 1000s.: (6.008.00)
	34.7039.30)	
12th speed 1/min: 13 KSB/AFB	200	KSB/AFB valve Volt: 12
valve Volt: 1	2	Shutoff
Shutoff		electromagnet Volt: 12
electromagnet Volt: 1	2	
Del. quyntity cm3/: 4	3.0044.00	TD-travel dif.measurement:
1000s · 6	41.2045.80)	correttore anticipo iniezione (SV):
20th speed 1/min: 6		1st speed 1/min: 1200
KSB/AFB		To-travel : 0.500.70
valve Volt: 1	12	difference mm: (0.500.70)
Shutoff		KSB/AFB
electromagnet Volt: 1		valve Volt: 12
Del. quantity cm3/: 3		Shutoff
1000 · C	(34.5040.50)	electromagnet Volt: 12
	.34.3040.307	
Mech, shutoff:	‡	Automatic starting fuel delivery:
Electr. shutoff:	1	1st speed 1/min: 130 KSB/AFB
1st speed 1/min: 2	290 +	valve Volt: 12
Del. quantity cm3/: 0		Shutoff
1000s.: (	(0.003.00)	electromagnet Volt: 12
Shutoff	+	Del. quantity cm3/: 47.0073.00
electromagnet volt: -	-	10008.: (47.0073.00)
KSB/AFB	+	
valve Volt: -	-	2nd speed 1/min: 270 KSB/AFB
Idle delivery:	+	valve Volt: 12
1-4 4 41-2 3	-m	Shutoff
1st speed 1/min: 2	(70 †	electromagnet Volt: 12
KSB/AFB	12	Del. quantity cm3/: 25.0035.00
valve Volt: 1	16 †	1000s.: (25.0035.00)
Shutoff		I the angular 1 / man 100
electromagnet Volt: 1		4th speed 1/min: 100
Del. quantity cm3/: 1	10.0014.00 †	KSB/AFB
1000S.: (	(8.0016.00)	valve Volt: 12
	+	

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 47.00...73.00 1000s.: (47.00...73.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

mm: 3.2...3.4 mm: 5.6...6.0 mm: 0.8...1.2 K KF MS

A = KSB adjustment point B = KSB curve point

Note inst. in remarks column

Test scheet

: 13.04.92 Edition

replaces

Calibrating oil : ISO-4113

: VE4/9F2050R476 Injection pump : 0 460 494 317 Type number

Customer Part-No. :

Customer-specific information : IVECO-SOFIM Customer

: 8144.97 500 Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil °C return temp.

with thermometer : 40.00...48.00 : 42.00...50.00 Electronically

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening |

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Lenath

Start of delivery

Indicator setting Piston stroke mm: 1.0 **Outlet** : A

Injection pump setting values Test specifications in parentheses

Timing-device travel

Speed 1/min: 1400 Charge press. hPa: 1000 Setting value mm: 5.80...6.20

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1400 Charge press hPa: 1000

Setting value bar: 6.10...6.70

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1200 Charge press. hPa: 1000

Del. quantity cm3/ 1000s.: 64.50...65.50

Shutoff

electromagnet Volt: 12 cm3/: 3.0 Dispersion 1000s.: (3.0)

Full-load del. w/out charge press.:

1/min: 500 Speed

Del. quantity cm3/ 1000s.: 40.00...41.00

Shutoff

electromagnet Volt: 12

Residual-Delivery Setting

Speed 1/min: 550

Del. quantity cm3/

1000s.: 1.00...5.00

Shutoff

electromagnet Volt: 12

Full-load speed regulation

1/min: 2400 Speed Charge press hPa: 1000

Del. quantity cm3/

1000s.: 31.00...37.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100 Del. quantity cm3/: 50.00...74.00 mind 1000s.: 50.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery: Inj.-qty.dif.measurement:

1/min: 1000 Speed Charge press hPa: 1000

cm3/Inj.-qty.

difference 1000s.: 20.50...26.50

Shutoff		+	Shutoff	
electromagnet Volt:	12	+	electromagnet Volt:	12
TD-travel dif.measu	rement	1	3	
correttore anticipo	injezione (SV)	1	Overlow quantity at	overflow valve:
1.Speed 1/min:	1000	1	0101 2011 40411010, 00	
Charge press hPa	1000	L	1st speed 1/min:	SOO
The Annual Press Heat	1000	Ţ	Charge press. hPa:	
TD-travel	4 40 4 70	T	Shutoff	
difference mm:	1.101.30	T		12
Shutoff	4	†	electromagnet Volt:	14 70 97 10
electromagnet Volt	: 12	†	Overflow :	41.7003.40
		+	quantity cm3/10s:	(26,7098.40)
Inspection pump tes	st specifications	+	2nd speed 1/min:	
Test specifications	s in parentheses	+	Charge press. hPa:	1000
		+	Shutoff	
Timing-device chara	acteristic:	†	electromagnet Volt:	12
<b>g</b>		+	Overflow :	55.60139.00
2nd speed 1/min	: 1800	1	quantity cm3/10s:	(40.60153.00)
Charge press hPa		1	444.000	
TD travel mm	8.209.00	L	Delivery-quant. and	breakaway char :
ID CTAVEL IIII	(7.709.10)	I	becive; y quarter and	er carana, ora
	(7.709.10)	T		
Shutoff	. 42	T	1nd amond 1/mins	KOOL
electromagnet Volt	1/00	T	1nd speed 1/min:	
3rd speed 1/min	: 1400	+	Charge-air pressure	
	: 1000	+	point hPa:	
	: 5.806.20	+	LDA-stroke mm:	4.5
mn	: (4.805.80)	+	Shutoff	-
Shutoff		+	electromagnet Volt:	12
electromagnet Volt	: 12	+	Del. quantity cm3/:	50.0051.00
5th speed 1/min	: 2050	+	1000S.:	(48.0053.00)
Charge press. hPa	: 1000	+	2nd speed 1/min:	2750
	9.6010.40	+	Charge press. hPa:	1000
	(9.3010.70)	1	Shutoff	
Shutoff	. (7.501.1.6	1	electromagnet Volt:	12
electromagnet Volt	• 12	1	Del. quantity cm3/:	0.003.00
6th speed 1/min	1000	1	1000s	(0.003.00)
Change areas in the	. 1000 . 1000	T	3rd speed 1/min:	
Charge press. hPa	2 (0 7 (0	T	Change pages (aller	4000
	: 2.603.40	†	Charge press. hPa:	1000
	: (1.903.30)	†	Shutoff	40
Shutoff		†	electromagnet Volt:	2.00 40.00
electromagnet Volt	: 12	+	Del. quantity cm3/:	2.00103
		+	1000S.:	(2.0010.38)
Supply-pump pressu	re characteristic:	+	5th speed 1/min:	
		+	Charge press. hPa:	1000
1st speed 1/min	: 600	+	Shutoff	
Charge press. hPa		+	electromagnet Volt:	12
Supply-pump		+	Del. quantity cm3/:	31.0037.00
	: 3.504.10	1	1000s.:	(30.0038.00)
Shutoff	. 3.30	1	9th speed 1/min:	
electromagnet Volt	• 12	1	Charge press. hPa:	
	: 1400	1	Shutoff	1000
		I	electromagnet Volt:	12
Charge press. hPa	1000	T	Doi guartity or 2/	4/ nn 47 nn
Supply-pump	. / 10 / 70	T	Del. quantity cm3/:	/47 70
1	: 6.106.70	†		(63.3067.70)
Shutoff	40	†	10th speed 1/min:	
electromagnet Volt	: 12	+	Charge press. hPa:	1000
	: 2050	+	Shutoff	46
Charge press. hPa	: 1000	+	electromagnet Volt:	12
Supply-pump		+	Del. quantity cm3/:	64.0067.00
pressure bar	: 8.409.00	+	1000s.:	(64.5067.50)
	•	+	12th speed 1/min:	

Ini.-qty.dif.measurement: Charge press. hPe: 1000 Shutoff 1st speed 1/min: 1000 electromagnet Volt: 12 Del. quyntity cm3/: 64.50...65.50 1060s.: (63.00...67.00) Charge press. hPa: 1000 Inj. -qty. cm3/ : 20.50...26.50 difference 1000s.: (19.50...27.50) 1/min: 500 18th speed Charge press. hPa: -Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12
Del. quantity cm3/: 40.00...41.00
1000S.: (38.00...43.00) TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1000 Charge press. hPa: 1000 Mech. shutoff: TD-travel : 1.10...1.30 mm: (1.10...1.30) Electr. shutoff: difference Shutoff 1/min: 425 electromagnet Volt: 12 1st speed Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Part-load del.at 3rd inj.-qty. terza fermo della portata stop (EGR set) scarico) (ARF) Shutoff electromagnet volt: gaz d'échappement-ARF) Damper set qty.: mm: 12.0 Spacing LFG-setting: 1/min: 1000 solidale con carcassa: 1st speed Idle delivery: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 25.50...27.50 1000s.: (24.00...29.00) 1st speed 1/min: 425 Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: Del. quantity cm3/: 9.00...13.00 1000s.: (8.00...14.00) 1/min: 200 1/min: 475 1st speed 2nd speed Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 50.00...74.00 1000s.: (50.00...74.00) Del. quantity cm3/: 5.00...11.00 1000s.: (5.00...11.00) 1/min: 350 2nd speed High Idle: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 36.00...44.00 1000s.: (36.00...44.00) 1st speed 1/mi: 600 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 5.00...9.00 1/min: 100 1000s.: (4.00...10.00) 4th speed Shutoff electromagnet Volt: 12 Residual: Del. quantity cm3/: 50.00...74.00 1000s.: (50.00...74.00) 1/arin: 550 1.Rotacao Shutoff electromagnet Volt: 12 Del. quantity cm3/: 1.00...5.00 Shutoff electromagnet: 1000s.: (0.00...6.00) Cut-in : 10.0 min voltage 1/min: 650 2nd speed : 12.0 Rated voltage Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 Mounting and assembly dimensions: Designation Load-dependent start of delivery:

LO4

K mm: KF mm: 5.6...6.0
MS mm: 1.1...1.5
LDA stroke mm: 4.5

Remarks:

\* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

Note inst. in remarks column

Test scheet

: 10.04.92 Edition

replaces

Calibrating oil : ISO-4113

: VE4/8F2600R284-1 Injection pump Type number : 9 460 620 005 Customer Part-No. : 897 040 8410

Customer-specific information : ISUZU Customer

: 4EC1-NA Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating oil return temp.

with thermometer : 40.00...46.00 : 42.00...50.00 Electronically

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening |

bar: 130.00...133.00 Pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450 x Length

Start of delivery Prestroke mm: -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing device travel

1/min: 1250 Speed

Setting value mm: 2.70...3.10

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1250 Speed

L06

Setting value bar: 3.40...4.00

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 1500 Speed

Del. quantity cm3/

1000s.: 28.70...29.70

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 400

Del. quaritity cm3/

**1000s.: 9.10...**13.10

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 2.5 1000s.: (3.0)

Full-load speed regulation

1/min: 2850 Speed

Del. quantity cm3/

1000s.: 13.90...19.90

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 25.00...65.00 mind 1000s.: 25.00

mind

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1250 Speed

cm3/Inj.-qty.

difference 1000s.: 5.50...8.50

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV) 1. Speed 1/min: 1250

1. Speed

TD-travel

mm: 0.20...1.30 difference

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 2300

mm: 7.00...7.80 mm: (6.70...8.10) Delivery-quant. and breakaway char.: To travel electromagnet Volt: 12
2nd speed 1/min: 1250
TD travel mm: 2.70...3.10 1nd speed 1/min: 1500 Shutoff nsn: (2.20...3.60) electromagnet Volt: 12 Del. quantity cm3/: 28.70...29.70 Shutoff 1000s.: (26.90...31.50) 1/min: 2975 electromagnet Volt: 12 1/min: 620 3rd speed 3rd speed Shutoff mm: 0.10...0.90 TD travel mm: (0.00...1.20) electromagnet Volt: 12 Del. quantity cm3/: 0.00...9.00 1000s.: (0.00...9.00) 5th speed 1/min: 2850 Shutoff electromagnet Volt: 12 4th speed 1/min: 2000 TD travel mm: 5.70...6.50 Shutoff electromagnet Volt: 12
Del. quantity cm3/: 13.90...19.90
10005.: (12.90...20.90) mm: (5.40...6.80) Shutoff electromagnet Volt: 12 1/min: 1200 5th speed 1/min: 1500 8th speed mn: 3.70...4.30 Shutoff TD travel electromagnet Volt: 12
Del. quantity cm3/: 29.20...32.20
1000s.: (28.70...32.70)
9th speed 1/min: 2000 mm: (3.30...4.70) Shutoff electromagnet Volt: 12 Supply-pump pressure characteristic: Shutoff 1/min: 2300 1st speed Supply-pump pressure bar: 6.00...6.60 Shutoff Shutoff electromagnet Volt: 12 2nd speed 1/min: 1250 2nd speed Supply-pump bar: 3.40...4.00 pressure Shutoff Shutoff electromagnet Volt: 12 Del. quyntity cm3/: 28.90...31.90 1000S.: (27.40...33.40) electromagnet Volt: 12 1/min: 500 3rd speed Supply-pump bar: 1.60...2.20 pressure Mech. shutoff: Shutoff electromagnet Volt: 12 4th speed 1/min: 2000 Electr. shutoff: 4th speed Supply-pump 1/min: 400 bar: 5.20...5.80 1st speed pressure Del. quantity cm3/: 0.00...3.00 Shutoff 1000s.: (0.00...3.00) electromagnet Volt: 12 Shutoff 1/min: 1500 5th speed electromagnet volt: -Supply-pump bar: 3.90...4.50 pressure Idle delivery: Shutoff electromagnet Volt: 12 1/min: 400 1st speed Shutoff Overlow quantity at overflow valve: 1/min: 1250 1st speed Shutoff electromagnet Volt: 12 : 83.00...127.00 Overflow 1/min: 650 cm3/10s: (68.00...142.00) 2nd speed quantity

Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...5.00 1000s.: (0.00...5.00) Load-dependent start of delivery: Inj.-gty.dif.measurement: 1/min: 1250 1st speed Inj.-qty. cm3/ : 5.50...8.50 difference 1000s.: (5.50...8.50) Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1250 : 0.20...1.20 TD-travel mm: (0.20...1.20) difference Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1/min: 500 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 24.00...36.00 1000s.: (24.00...36.00) 1/min: 100 4th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 25.00...65.00 1000s.: (25.00...65.00) Shutoff electromagnet: Cut-in min voltage : 10.0 : 12.0 Rated voltage Mounting and assembly dimensions: Designation mm: 3.2...3.4 mm: 5.6...6.0 mm: 1.2...1.6 K KF MS Remarks:

Note inst. in remarks column

: OPE Test scheet : 09.04.92 Edition replaces

: ISO-4113 Calibrating oil

: VE4/10F2200R365-1 Injection pump : 9 460 620 007 Type number Customer Part-No. : 897 040 8430

Customer-specific information : ISUZU Customer

: 4EE1-TC Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil return temp.

with thermometer : 40.00...46.00 : 42.00...50.00 Electronically

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening

bar: 130.00...133.00 Pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450 x Length

Start of delivery Prestroke mm: -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1250 Speed Charge press. hPa: 1000

Setting value mm: 3.10...3.50

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1250 Speed Charge press hPa: 1000

Setting value bar: 3.90...4.50

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1250 Speed Charge press. hPa: 1000

Del. quantity cm3/ 1000s.: 51.30...52.30

Shutoff

electromagnet Volt: 12 1000s.: (2.5)

Full-load del. w/out charge press.:

1/min: 550 Speed

Del. quantity cm3/

1000s.: 36.80...40.80

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 415 Speed

Del. quantity cm3/

1000s.: 8.20...12.20

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 2.5 1000s.: (3.0)

Full-load speed regulation

1/min: 2600 Speed Charge press hPa: 1000

Del. quantity cm3/

1000s.: 19.20...25.20

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100 Del. quantity cm3/: 38.70...48.70

1000s.: 38.70 mind

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery: Inj.-aty.dif.measurement:

1/min: 1250 Speed hPa: 1000 Charge press cm3/

Inj.-qty. difference 1000s.: 26.50...29.50

Shutoff

electromagnet Volt: 12

Overlow quantity at overflow valve: TD-travel dif.measurement correttore anticipo iniezione (SV) 1.Speed 1/min: 1250 1/min: 1250 1st speed Charge press. hPa: 1000 Charge press TD-travel hPa: 1000 Shutoff mm: 1.70...2.30 electromagnet Volt: 12 difference : 83.0C...127.00 Shutoff Overflow cm3/10s: (68.00...142.00) quantity electromagnet Volt: 12 Delivery-quant. and breakaway char.: Inspection-pump test specifications Test specifications in parentheses 1/min: 1000 Timing-device characteristic: 1nd speed Charge-air pressure-setting hPa: 340 1/min: 2250 2nd speed hPa: 1000 mm: 4.00 LDA-stroke Charge press TD travel mm: 7.20...8.00 Shutoff mm: (6.90...8.33) electromagnet Volt: 12 Del. quantity cm3/: 44.20...45.20 1000s.: (42.20...47.20) 3rd speed 1/min: 2850 Charge press. hPa: 1000 Shutoff Shutoff electromagnet Volt: 12 3rd speed 1/min: 1250 Charge press hPa: 1000 mm: (2.60...4.00) TD travel electromagnet Volt: 12 Del. quantity cm3/: 0.00...5.00 1000\$:: (0.00...5.00) Shutoff electromagnet Volt: 12 4th speed 1/min: 600 1/min: 2600 5th speed Charge press. hPa: 1000 Shutoff hPa: 1000 Charge press mm: 0.30...1.10 mm: (0.00...1.40) TD travel electromagnet Volt: 12
Del. quantity cm3/: 19.20...25.20
1000S.: (17.70...26.70)
8th speed 1/min: 1500
Charge press. hFa: 1000
Shutoff Shutoff electromagnet Volt: 12 5th speed 1/min: 2000 5th speed Charge press. hPa: 1003 mm: 6.10...6.90 TD travel electromagnet Volt: 12 Del. quantity cm3/: 49.00...52.00 1000s.: (48.20...52.80) mm: (5.80...7.20) Shutoff electromagnet Volt: 12 1/min: 1500 9th speed Charge press. hPa: -Shutoff Supply-pump pressure characteristic: electromagnet Volt: 12
Del. quantity cm3/: 34.50...37.50
1000S.: (33.70...38.30)
11th speed 1/min: 2200 1/min: 2250 1st speed Charge press. hPa: 1000 Supply-pump bar: 6.50...7.10 pressure Charge press. hPa: 1000 Shutoff Shutoff electromagnet Volt: 12 2nd speed 1/min: 1250 Charge press. hPa: 1000 electromagnet Volt: 12
Del. quantity cm3/: 49.60...52.60
1000S.: (48.80...53.40)
12th speed 1/min: 1250
Charge press. hPa: 1000
Shutoff Supply-pump bar: 3.90...4.50 pressure Shutoff electromagnet Volt: 12 3rd speed 1/min: 600 electromagnet Volt: 12 Del. quyntity cm3/: 51.30...52.30 1000s.: (49.50...54.10) Charge press. hPa: 1000 Supply-pump pressure 1/min: 550 bar: 2.10...2.70 13th speed Charge press. hPa: -Shutoff Shutoff' electromagnet Volt: 12 electromagnet Volt: 12

Del. quantity cm3/: 36.80...40.80 1000s.: (35.80...41.80)

Mech. shutoff:

Electr. shutoff:

1/min: 415 1st speed

Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00)

Shutoff

electromagnet volt: -

Idle delivery:

1st speed 1/min: 415 Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 8.20...12.20

1000s.: (6.20...14.20) cm3/: 2.5

Dispersion

1000s.: (3.0) 1/min: 550 2nd speed

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 0.00...5.00 1000s.: (0.00...5.00)

Load-dependent start of delivery: Inj.-qty.dif.measurement:

1/min: 1250 1st speed Charge press. hPa: 1000 Inj. qty. cm3/ : 26.50...29.50

difference 1000s.: (26.50...29.50)

Shutoff

electromagnet Volt: 12

TD-travel dif.measurement:

correttore anticipo iniezione (SV):

1/min: 1250 1st speed Charge press. hPa: 1000

: 1.70...2.30 TD-travel mm: (1.70...2.30) difference

Shutoff

electromagnet Volt: 12

Automatic starting fuel delivery:

1/min: 150 2nd speed

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 29.00...49.00 1000s.: (29.00...49.00)

1/min: 100 4th speed

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 28.70...48.70

1000s.: (28.70...48.70)

Shutoff electromagnet:

Cut-in

: 10.0 min voltage : 12.0 Rated voltage

Mounting and assembly dimensions:

Designation

mm: 3.2...3.4 KF mm: 5.6...6.0 mm: 0.7...1.1 MS mm: 4.0 LDA stroke

Remarks:

\* Correction at adjusting nut (46)

Overflow restriction 0.55 mm - Part No. ..303

L11

Note remarks

Test sheet

: KHD

Edition

: 30.04.92

Replaces

Test oil

: ISO-4113

Combination no. : 0 400 646 266AB

Injection pump

Pump designation : PE6A95D410LS2587

EP type number

: 0 410 696 983

Governor

Governor design. : RQV300...1150AB1088L

: 0 420 212 115 Governer no.

Customer-spec. information

Customer

: KHD

Engine

: F6L413 FW

1st version kW

: 96.0

Rated speed

: 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Operiina

pressure, bar

: 172...175

Test Lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 1.50...1.60

: (1.45...1.65)

Rack travel in mm : 9.00...12.00

Firing order

: 1-6-5-4-3-2

Phasing

: 0-75-120-195-240-315

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rom: 1150

Rack travel in mm : 8.30...8.40

Del.guantity cm3/: 7.4...7.6

100 s: (7.2...7.8)

Spread

cm3 : 0.3

100 s: (0.6)

2nd speed

rpm : 300.0

Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.1...1.7

100 s: (0.8...1.9)

Spread

cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 300

travel mm

: 1.10...1.60

2nd speed

rpm : 390

travel mm

: 2.20...2.60

3rd speed travel mm rpm : 1195

: 8.70...9.10

4th speed travel mm rpm

: 1245 : 9.40...9.80

GUIDE SLEEVE POSITION Control-Lever position

Degree: -1

rpm : 1170

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Del.quantity

Speed

Spread

rpm : 1150

: 74.0...76.0

1000 : (72.0...78.0)

: 3.50 cm3

1000 : (6.00)

1st version Control lever

position degrees: ?

Testina:

1st rack travel in: 7.30 Speed rpm : 1190...1200

2nd rack travel in: 4.00

rpm : 1232...1262 Speed

4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: ?

Testing:

Speed : 200 rpm Minimum rack trave: 7.50 : 300 Speed rom

Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

rpm : 300...420 Speed

TORQUE CONTROL

Dimension a mm : 0.90

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 8.30...8.40

2nd speed rpm : 800

Rack travel in m: 9.20...9.40

3rd speed rpm : 1000

Rack travel in m: 8.70...9.00

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800 Del.quantity cm3/: 77.0...80.0 1000 s: (74.5...82.5)

rpm : 100 Speed

Del.quantity cm3/: 66.0...69.0 \*

1000 s: (63.5...71.5)

RACK STOP ADJUSTMENT

rpm : 500 Speed

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 7.30

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Remarks:

\* Set warm-start quantity at excess-fuel stop for starting on governor housing

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

**APPLICATION** 

Below-ground operation

Note remarks

Test sheet : KHD : 30.04.92 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 646 266AC

Injection pump

Pump designation : PE6A95D410LS2587

EP type number

: 0 410 696 983 Governor

: RQV300...1150AB1088L Governor design. : 0 420 212 115 Governer no.

Customer-spec. information : KHD Customer

: F6L413 FW Engine

: 75.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 014 Test Lines

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 1.50...1.60 Prestroke mm : (1.45...1.65)

Rack travel in mm : 9.00...12.00

: 1-6-5-4-3-2 Firing order

: 0-75-120-195-240-315 Phasing

: 0.50 (0.75) Tolerance + - "

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 7.40...7.50

Del.quantity cm3/: 6.2...6.4

100 s: (6.0...6.6)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.1...1.7

100 s: (0.8...1.9)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.10...1.60 travel mm

rpm : 390 2nd speed

: 2.20...2.60 travel mm

: 1195 3rd speed rpm

: 8.70...9.10 travel mm

rpm : 1245 4th speed

: 9.40...9.80 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1170

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

: 62.0...64.0 Del.quantity

1000 : (60.0...66.0)

: 3.50 Spread cm3

1000 : (6.00)

1st version Control lever

position degrees: ?

Testing:

1st rack travel in: 6.40

Speed rpm : 1190...1200 2nd rack travel in: 4.00

rpm : 1215...1245 Speed

4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: ?

Testing:

Speed rpm : 200 Minimum rack trave: 7.50 rpm

Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

rom : 300...420 Speed

TORQUE CONTROL

Dimension a mm : 0.90

Torque control curve - 1st version

1st speed rpm : 1150 Rack travel in m: 7.40...7.50

2nd speed rpm : 800 Rack travel in m: 8.30...8.50

3rd speed rpm : 1000 Rack travel in m: 7.60...7.90

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800 Del.quantity cm3/ : 65.0...68.0 1000 s: (62.5...70.5)

: 100 rpm

Del.quantity cm3/: 66.0...69.0 \*

1000 s: (63.5...71.5)

RACK STOP ADJUSTMENT

: 500 Speed nom

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 6.40

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 120.0...130.0 1000 s: (117.0...133.0)

Remarks:

\* Set warm-start quantity at excess-fuel stop for starting

on governor housing

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

**APPLICATION** 

Below-ground operation

Note remarks

Test sheet : KHD : 30.04.92 Edition

Replaces

: ISO-4113 Test oil

: 0 400 648 148 Combination no.

Injection pump

Pump designation : PE8A950410LS2608 : 0 410 698 988 EP type number

Governor

Governor design. : RQV450...1150AB1268L

: 0 420 212 243 Governer no.

Customer-spec. information : KHD Customer

Engine : F8L413F

1st version kW : 165.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm : 9.00...12.00

: 1-8-7- 2- 6- 5-4-3 Firing order

: 0-45-90-135-180-225-Phasing

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 800

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 9.7...9.9

100 s: (9.5...10.1)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 450.0 2nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.1...1.7

100 s: (0.8...1.9)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 400 1st speed

: 0.30...0.60 travel mm

rpm : 750 2nd speed

: 3.50...3.80 travel mm : 1050

3rd speed rpm travel nm

: 6.70...6.90 : 1200 rpm

4th speed : 8.90...9.40 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1150 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 800 Speed

: 97.0...99.0 Del.quantity

1000 : (95.0...101.0)

: 3.50 Spread cm3

1000 : (6.00)

## RATED SPEED

1st version Control lever

position degrees: 60...63

Testina:

1st rack travel in: 8.50

Speed rpm : 1170...1180 2nd rack travel in: 4.00

Speed rpm : 1190...1220 4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 6...14

rpm : 450 Speed

Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

rpm : 530...690 Speed

TORQUE CONTROL

Dimension a mm : 1.00

Torque control curve - 1st version

1st speed rpm : 800

Rack travel in m: 10.50...10.60

2nd speed rpm : 1130
Rack travel in m: 9.50...9.70
3rd speed rpm : 1050

Rack travel in m: 9.80...10.10

START CUT-OUT

1/min: 370 (390) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 1130 Speed

Del.quantity cm3/: 86.5...89.5 1000 s: (84.0...92.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 8.50

rpm : 1170...1180 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 120.0...130.0 1000 s: (117.0...133.0)

L17

Remarks:

**APPLICATION** 

Combine-harvester

Note remarks

Test sheet : MB 4,0 11 : 03.04.92 Edition : 11.91 Replaces : ISO-4113 Test oil

: 0 400 844 096 Combination no.

Injection pump

Pump designation : PES4A95D410RS2809 : 0 410 894 993 EP type number

Governor

: RQV300...1400AB1035-Governor design.

23L

: 0 420 212 227 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: OM 364 Engine

: 65.0 1st version kW Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.20...3.30 : (3.15...3.35) Prestroke mm

Rack travel in mm : 9.00...12.00 : 1-3-4-2 Firing order

: 0-90-180-270 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 9.90...10.00

Del.guantity cm3/: 6.4...6.6

100 s: (6.2...6.8)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm: 8.5...8.7 Del.quantity cm3/: 0.8...1.2

100 s: (0.5...1.4)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

0.80...1.30 travel mm

2nd speed 500 rpm

2.30...2.80 travel mm : 750 3rd speed rom

: 4.10...4.30 travel mm

1500 4th speed rpm : 8.50...8.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1450 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

: 64.5...66.5 Del.quantity

1000 : (62.5...68.5)

: 3.50 Spread cm3 1000 : (6.00)

1st version Control Lever

position degrees: 111...119

Testina:

1st rack travel in: 8.90

rpm : 1450...1460 Speed

2nd rack travel in: 4.00

rpm : 1535...1565 Speed

4th rack travel in: 1670 rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 73...81

Testina:

: 100 Speed rpm Minimum rack trave: 9.60 rpm : 300

Rack travel in mm : 8.50...8.70

CONSTANT REGULATION

rpm : 550...700 Speed

TORQUE CONTROL

Dimension a mm : 1.20

Torque control curve - 1st version

rpm : 1400 1st speed

Rack travel in m: 9.90...10.00

2nd speed rpm : 400

Rack travel in m: 11.10...11.20
3rd speed rpm : 630
Rack travel in m: 10.90...11.20

: 925 4th speed rpm

Rack travel in m: 10.40...10.70

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

: 400 Speed man

Del.quantity cm3/: 49.0...53.0 1000 s: (46.5...55.5)

Speed rpm: 630 Del.quantity cm3/: 49.0...53.0 1000 s: (46.5...55.5)

Speed rpm: 925 Del.quantity cm3/: 59.0...63.0

1000 s: (56.5...65.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 8.90

rpm : 1450...1460 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0)

Rack travel in mm : 14.40...14.80

Remarks:

L19

Note remarks

Test sheet

: 31.01.92 Edition

Replaces

: ISO-4113 Test oil

: 0 400 844 098 Combination no.

Injection pump

Pump designation : PES4A95D410RS2809

: 0 410 894 993 EP type number

Governor

: RQV300...1400AB1065-Governor design.

28L

: 0 420 212 242 Governer no.

Customer-spec, information

: MERCEDES-BENZ Customer

: OM 364 Engine

: 65.0 1st version kW : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.20...3.30 Prestroke mm

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

: ()--*y*0-180-2*?*0 Phasing

Tolerance + - \* : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 9.90...10.00

Del.quantity cm3/: 6.5...6.6

100 s: (6.3...6.8)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.0 2nd speed

Rack travel in mm: 8.4...8.6

Del.quantity cm3/: 0.8...1.2 100 s: (0.5...1.4)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 0.80...1.30 travel mm

rpm : 500 2nd speed

: 2.30...2.80 travel ma

rpm : 750 3rd speed

: 4.10...4.30 travel mm

: 1500 4th speed rom

: 8.50...8.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1450 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

: 65.0...66.0 Del.quantity

1000 : (63.0...68.0)

: 3.50 Spread cm3

1000 : (6.00)

1st version Control lever position degrees: 111...119 Testing: 1st rack travel in: 8.90 rpm : 1450...1460 2nd rack travel in: 4.00 rpm : 1535...1565 Speed 4th rack travel in: 1670 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 73...81 Testina: : 100 Speed rom Minimum rack trave: 9.60 rpm : 300 Speed Rack travel in mm : 8.40...8.60 CONSTANT REGULATION rpm : 550...700 Speed TORQUE CONTROL Dimension a mm : 0.80 Torque control curve - 1st version 1st speed rpm : 1400 Rack travel in m: 9.90...10.00 2nd speed rpm : 400 Rack travel in m: 10.70...10.90 3rd speed rpm : 670 Rack travel in m: 10.50...10.70 4th speed rpm : 1060 Rack travel in m: 10.10...10.40 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version rpm : 400 Speed Del.quantity cm3/: 48.0...51.0 1000 s: (45.5...53.5)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 8.90 Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm: 100
Del.quantity:cm3/: 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm: 14.80...15.20

Remarks:

:

Note remarks

Test sheet : MB 6,0 j 4 Edition : 03.04.92

Replaces : 03.91 Test oil : ISO-4113

Combination no. : 0 400 846 591

Injection pump

Pump designation : PES6A95D410RS2797 EP type number : 0 410 896 900

EP type number Governor

Governor design. : RQV300...1400AB1065-

22L

Governer no. : 0 420 212 226

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 366

1st version kW : 97.0 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening |

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \cdot : 0.50 (0.75)$ 

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 10.10...10.20

Del.quantity cm3/: 6.1...6.3

100 s: (5.9...6.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 8.9...9.1

Del.quantity cm3/: 0.8...1.2

100 s: (0.5...1.4)

Spread cm3 : 0.3 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1400

Del.quantity : 61.0...63.0

1000 : (59.0...65.0)

Spread cm3 : 3.50

1000 : (6.00)

1st version Control lever

position degrees: 109...117

Testing:

1st rack travel in: 9.10

rpm : 1450...1460 Spe∈d

2nd rack travel in: 4.00

rom : 1540...1570 Speed

4th rack travel in: 1670

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 72...80

Testing:

Speed rom Minimum rack trave: 10.50

: 300 Speed PDM

Rack travel in mm : 8.90...9.10

CONSTANT REGULATION

rpm : 500...650 Speed

TORQUE CONTROL

Dimension a mm : 1.20

Torque control curve - 1st version

1st speed rpm : 1400 Rack travel in m: 10.10...10.20

2nd speed rpm : 400

Rack travel in m: 11.30...11.60

3rd speed rpm : 630

Rack travel in m: 10.90...11.20

4th speed rpm : 925

Rack travel in m: 10.40...10.70

START CUT-OUT

1/min : 240 (260) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

: 400 Speed r pm

Del.quantity cm3/: 49.0...52.0 1000 s: (46.5...54.5)

Speed rpm : 630 Del.quantity cm3/ : 49.0...53.0 1000 s: (46.5...55.5)

rpm : 925 Speed

Del.quantity cm3/: 57.0...61.0 1000 s: (54.5...63.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.10

rpm : 1450...1460 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0

1000 s: (75.0...91.0)

Rack travel in mm: 14.60...15.00

Remarks:

Set shutoff stop to contact at 3.0...3.5 mm control-rod travel.

Note remarks

: IHC 7,6 y 2 : 13.03.92 : 11.91 Test sheet Edition Peolaces

: ISO-4113 Test oil

Combination no. : 0 400 846 604

Injection pump

Fump designation : PES6A95D32ORS2779 : 0 410 896 903 EP type number

Governor

: RQV350...1350AB1248-Governor design.

: 0 420 213 126 Governer no.

Customer-spec. information : NAVISTAR Customer

: DT 360 Engine

: 127.0 1st version kW : 2700 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

: 1 688 901 110 assembly

**Opening** 

: 250...253 pressure, bar

Orifice plate

: 0,5 diameter mm

: 1 680 750 008 Test Lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.45...2.55 Prestroke mm

: (2.40...2.60) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

rpm: 1350 1st speed

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 7.9...8.1

100 s: (7.7...8.3)

cm3 : 0.3Spread

100 s: (0.6)

rpm : <u>3</u>50.0 2nd speed Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 1.7...2.1

100 s: (1.4...2.3)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1350 1st speed

: 7.30...7.50 travel mm

: 1460 2nd speed rpm

: 8.10...8.50 travel mm

: 550 3rd speed rpm

3.10...3.70 350 travel mm

4th speed rpm

: 1.30...1.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1350 Speed Aneroid pressure h: 900

79.5...81.5 1000 : (77.5...83.5) Del.quantity

: 3.50

cm3 Spread 1000 : (6.00)

1st version Control lever

position degrees: 44...52

Testina:

1st rack travel in: 10.90

rpm : 1390...1420 Speed

2nd rack travel in: 4.00

rpm : 1525...1535 Speed

4th rack travel in: 1625

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 11...19

Testing:

: 100 Speed rom

Minimum rack trave: 9.00 rom

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

: 350...500 Speed rpm

Aneroid/Altitude

Compensator Test

1st version

Setting

pm : 500 hPa : 900 Speed rpm

Pressure

: 11.90...12.00 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 9.90...10.10
2nd pressure hPa : 110
Rack travel in m: 10.40...10.50
3rd pressure hPa : 300
Rack travel in m: 11.50...11.90

START CUT-OUT

1/min : 270 (280) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 71.0...75.0

1000 s: (69.0...77.0)

BREAKAWAY

L25

1st version

1mm rack travel less than

full load rack tr: 10.90

rpm : 1390...1420 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 16.20...17.00

LOW IDLE

: 350 Speed "pm

Rack travel in mm : 5.90...6.10

Del.quantity cm3/: 17.0...21.0 1000 s: (14.5...23.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

: NAVISTAR #1819273C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of

delivery of cylinder 1

Note remarks

: IHC : 30.04.92 Test sheet Edition : 03.92 Replaces : ISO-4113 Test oil

: 0 400 846 606 Combination no.

Injection pump

Pump designation : PES6A95D32ORS2779 : 0 410 896 903 EP type number

Governor

: RQV350...1200AB1236-Governor design.

: 0 420 213 127 Governer no.

Customer-spec. information Customer : NAVISTAR

: DT 466 Engine

: 145.0 : 2400 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. \*C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

: 1 688 901 110 assembly

**Opening** 

: 250...253 pressure, bar

Orifice plate

diameter mm : 0,5

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6 00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.65...2.75 : (2.60...2.80)

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

rpm: 1200 1st speed

Rack travel in mm : 13.10...13.20

Del.quantity cm3/: 9.7...9.9

100 s: (9.5...10.1)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.0 2nd speed Rack travel in mm: 5.4...5.6

Del.quantity cm3/: 1.7...2.1 100 s: (1.5...2.3)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1400 1st speed

: 8.60...9.00 travel mm

rpm : 1250 2nd speed

: 7.30...7.50 travel mm

rpm : 550 3rd speed

: 3.10...3.70 : 350 travel mm

4th speed rom

: 1.30...1.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed Aneroid pressure h: 900

: 97.0...99.0 Del.quantity

1000 : (95.0...101.0) : 3.50 cm3

Spread 1000 : (6.00)

1st version Control Lever

position degrees: 44...52

Testina:

1st rack travel in: 12.10

rom : 1240...1270 Speed

2nd rack travel in: 4.00 Speed rpm : 1385...1395 4th rack travel in: 1500

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 11...19

Setting point w/out bumper spring

rpm : 350Speed

Testina:

rpm : 100 Speed Minimum rack trave: 9.00 Speed rpm : 350 Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

rpm : 350...500 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 900 Pressure

Rack travel mi : 13.10...13.20

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.90...10.10

2nd pressure hPa : 225 Rack travel in m: 10.90...11.00

3rd pressure hPa : 460

Rack travel in m: 12.30...12.70

START CUT-OUT

1/min : 270 (280) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 74.5...78.5 1000 s: (72.5...80.5)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 12.10

rpm : 1240...1270 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...170.0

1000 s: (125.0...175.0)

Rack travel in mm : 16.20...17.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 17.0...21.0
1000 s: (15.0...23.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: NAVISTAR #1819325C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of

delivery of cylinder 1

Note remarks

Test sheet : IHC

: 30.04.92 **Fdition** 

Replaces

: ISO-4113 Test oil

: 0 400 846 609 Combination no.

Injection pump

Pump designation : PES6A95D32ORS2779

EP type number : 0 410 896 903

Governor

: RQV350...1350AB1248-Governor design.

: 0 420 213 128 Governer no.

Customer-spec, information : NAVISTAR Customer

: DTA-360 Engine

: 127.0 1st version kW Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

: 1 688 901 110 assembly

Opening

pressure, bar : 250...253

Orifice plate

diameter mm : 0.5

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.45...2.55 Prestroke mm

: (2.40...2.60)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-50-120-180-240-300 Phasina

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 1350

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 7.3...7.5

100 s: (7.1...7.7)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 350.0 2nd speed Rack travel in mm: 5.9...6.1

Del.quantity cm3/: 1.7...2.1 100 s: (1.4...2.3)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1350 1st speed : 7.30...7.50 travel mm

2nd speed 1460 COM : 8.10...8.50 travel mm

: 550 3rd speed rpm

: 3.10...3.70 : 350 travel mm 4th speed rpm

: 1.30...1.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1350 Speed

Aneroid pressure h: 900

: 73.5...75.5 : (71.5...77.5) Del.quantity

1000

: 3.50 cm3 Spread 1000 : (6.00)

1st version Control lever

position degrees: 43...51

Testing:

1st rack travel in: 10.60

rpm : 1410...1430 Speed

2nd rack travel in: 4.00

: 1525...1535 Speed rom

4th rack travel in: 1625 rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 12...20

Testing:

: 100 Speed rpm Minimum rack trave: 9.00 : 350 rpm

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

: 350...500 Speed rpm

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed **m**Qn hPa : 900 Pressure

: 11.60...11.70 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 9.40...9.60

2nd pressure hPa : 200
Rack travel in m: 10.10...10.20
3rd pressure hPa : 380
Rack travel in m: 10.90...11.30

START CUT-OUT

1/min: 270 (280) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 61.0...65.0

1000 s: (59.0...67.0)

**BREAKAWAY** 

MO1

1st version

1mm rack travel less than

full load rack tr: 10.60

rpm : 1410...1430 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 130.0...170.0 1000 s: (125.0...175.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm: 350 Rack travel in mm: 5.90...6.10

Del.quantity cm3/: 17.0...21.0

1000 s: (14.5...23.5)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

: NAVISTER #1819884C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of

delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : CUM 8,3 L 1 : 02.05.89 Test sheet Edition : 20.12.88 Replaces : ISO-4113 Test oil Combination no. : 0 400 8/6 129 Injection pump Pump designation : PES6A100D320/3RS2763 : 0 410 806 006 EP type number Governor : RSV400...1050A0C2190 Governor design. -27R : 0 420 233 225 Governer no. Customer-spec. information Customer : C.D.C. : 6CT 8.3 Engine : 111.0 1st version kW : 2100 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 017 assembly Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,6 : 1 680 750 014 Test lines Outside diameter x Wall thickness : 6.00X2.00X600 x Length mm (A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm : (2.75...2.95) Rack travel in mm: 10.50 : 1-5-3-6-2-4 Firing order : 0-60-120-180-240-300 Phasing Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING rpm: 1100 1st speed Rack travel in mm : 9.70...9.80 Del.quantity cm3/: 8.5...8.7 100 s: (8.3...8.9) cm3 : 0.4Spread 100 s: (0.6) rpm : 400.02nd speed Rack travel in mm: 5.3...5.5 Del.quantity cm3/: 1.1...1.5 100 s: (0.9...1.8) cm3 : 0.6 Spread 100 s: (0.8) GUIDE SLEEVE POSITION Control-Lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : ? FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1100 Speed : 85.0...87.0 Del.quantity 1000 : (83.0...89.0) : 4.00 cm3 Spread 1000 : (6.50)RATED SPEED 1st version Control lever position degrees: 50...58 Testing:

1st rack travel in: 8.70 rpm : 1145...1155 Speed 2nd rack travel in: 4.00 Speed rpm : 1205...1235 3rd rack travel in: 4.00

Speed rpm : 1210...1240 4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 30...38 Setting point w/out bumper spring

Speed rpm : 400 Rack travel in mm : 4.9

Testing:

rpm : 100 Speed Minimum rack trave: 19.00 rpm : 400 Speed

Rack travel in mm : 5.30...5.50 Rack travel in mm : 2.00

rpm : 470...530 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 9.70...9.80

2nd speed rpm : 750

Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 Speed rom

Del.quantity cm3/: 94.0...98.0 1000 s: (92.0...100.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 8.70

rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 150.0...170.0 1000 s: (145.0...175.0) Rack travel in mm: 19.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.30...5.50

M03

Del.quantity cm3/: 11.5...15.5 1000 s: (9.0...18.0)

cm3 : 6.00 Spread

1000 s: (8.00)

Remarks:

: c.p.c. # 3912534

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

Test sheet

: 03.04.92 Edition

Replaces

: ISO-4113 Test oil

: 0 400 874 252 Combination ro.

Injection pump

Pump designation : PES4A95D41ORS2809-1

EP type number

: 0 410 894 992

Governor

: RSV350...1400A0C2006 Governor design.

-7L

: 0 420 232 575 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M364 Engine

: 65.0 1st version kW : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina .

: 172...175 pressure, bar

: 1 680 750 015 Test lines

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.20...3.30 : (3.15...3.35) Prestroke mm

Rack travel in mm : 9.00...12.00 : 1- 3- 4- 2 Firing order

: 0-90-180-270 Phasina

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1380 1st speed

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 6.4...6.6

100 s: (6.2...6.8)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.0 2nd speed Rack travel in mm: 8.0...8.4

Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1380 Speed

: 64.5...66.5 Del.quantity 1000 : (62.5...68.5)

: 3.50 Spread cm3 : (6.00)

1000

RATED SPEED

1st version

Control lever

position degrees: 109...117

Testing:

1st rack travel in: 9.40

Speed rpm: 1433...1438 2nd rack travel in: 4.00

rpm : 1491...1508 Speed

4th rack travel in: 1575

: 0.30...1.70 Speed man

LOW IDLE 1

Control lever position degrees: 74...82 Setting point w/out bumper spring rpm : 350 Speed Rack travel in am: 8.2 Testing: rpm : 100 Speed Minimum rack trave: 19.50 : 350 Speed COO Rack travel in mm: 8.00...8.40 Rack travel in mm : 2.00 : 490...550 Speed mgn SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1380 Rack travel in m: 10.40...10.50 2nd speed rpm : 400 Rack travel in m: 11.70...11.80 3rd speed rpm : 900 Rack travel in m: 11.10...11.30 FUEL DELIVERY CHARACTERISTICS 1st version : 400 Speed rom . Del.quantity cm3/: 48.0...51.0 1000 s: (45.5...53.5) Spread cm3 1000 s: (5.00) STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0) Rack travel in mm : 16.30...16.70 LOW IDLE Speed rpm : 350 Rack travel in mm : 8.00...8.40 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks:

Note remarks

: DEE 7,6 h11 Test sheet : 07.04.89 Edition : 15.6.88 Replaces

: ISO-4113 Test oil

: 0 400 876 347 Combination no.

Injection pump

Pump designation : PES6A100D410RS2676 : 9 410 230 023

EP type number

Governor

Governor design.

: RSV600...1100A2C2161

-5L

: 0 420 232 495 Governer no.

Customer-spec. information

: JOHN DEERE Customer

: 6466AZ-02 Engine

: 130.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.45...2.55 Prestroke mm ; (2.40...2.60)

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 10.10...10.20

Del.quantity cm3/: 11.1...11.3

100 s: (10.9...11.5)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 600.0 2nd speed Rack travel in mm: 4.2...4.4 Del.quantity cm3/: 1.1...1.5

100 s: (0.8...1.7)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 700

Del.quantity

: 111.0...113.0 1000 : (109.0...115.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 44...52

MO6

restina:

1st rack travel in: 9.10

rpm : 1145...1155 Speed

2nd rack travel in: 4.00

rpm : 1195...1205 Speed

4th rack travel in: 1250

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 25...33

Setting point w/out bumper spring

rpm : 600 Rack travel in mm: 3.8

Testing:

rpm : 100 Speed

Minimum rack trave: 19.00

Speed rpm : 600 Rack travel in mm : 4.20...4.40

Rack travel in mm : 2.00

: 670...730 Speed COM

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 10.10...10.20

2nd speed nom : 950

Rack travel in m: 10.70...10.90

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom hPa : 95 Pressure

: 9.00...9.10 Rack travel mm

Measurement

Speed  $1/\min : 500$ 

1st pressure hPa : -

Rack travel in m: 8.20...8.40

2nd pressure hPa : 145

Rack travel in m: 9.80...10.20

3rd pressure hPa : 700

Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

: 950 rpm

Del.quantity cm3/: 119.0...122.0 1000 s: (116.5...124.5)

Aneroid pressure h: -

Speed LDW

M07

Del.quantity cm3/: 68.0...72.0 1000 s: (66.0...74.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 9.10

rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 190.0...210.0 1000 s: (185.0...215.0)

LOW IDLE

rpm : 600 Speed

Rack travel in mm : 4.20...4.40

Del.quantity cm3/: 11.0...15.0

1000 s: (8.5...17.5)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

: JOHN DEERE # RE32396

Setting without torque-control spring retainer with 1 mm control-rod travel less. Raising of full-load delivery with torque-control spring retainer to 10.1 mm control-rod travel.

Start-of-delivery mark = 15.5° after start of delivery cyl. 1.

**APPLICATION** 

Tractor (tractor engines)

Note remarks

Test sheet : DEE 7,6 h15 Edition : 17.05.90 Replaces : 2.5.90

Test oil : ISO-4113

Combination no. : 0 400 876 371

Injection pump

Pump designation : PES6A1000410RS2676-1

EP type number : 9 410 230 024

Governor

Governor design. : RSV450...1050A0C2204

-6L

Governer no. : 0 420 232 539

Customer-spec. information

Customer : JOHN DEERE

Engine : 6466AT13

1st version kW : 120.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55 : (2.40...2.60)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - \* : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 10.10...10.20

Del.guantity cm3/: 10.1...10.3

100 s: (9.9...10.5)

Spread cm3:0.4

100 s: (0.6)

2nd speed rpm : 450.0 Rack travel in mm : 5.4...5.6 Del.quantity cm3/ : 1.7...2.1

100 s: (1.5...2.3)

Spread cm3 : 0.6 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

ver position
Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1050

Del.quantity : 101.5...103.5 1000 : (99.5...105.5)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version Control lever

position degrees: 35...43

Testing:

MO8

1st rack travel in: 9.10

rom : 1095...1105 Speed

2nd rack travel in: 4.00

rpm : 1180...1190 Speed

3rd rack travel in: 4.00 Speed rpm: 1185...1215 4th rack travel in: 1350

rpm : 0.30...1.40Speed

LOW IDLE 1

Control Lever

position degrees: 19...27

Setting point w/out bumper spring

rpm : 450 Speed Rack travel in mm: 5.0

Testing:

rpm : 100 Speed Minimum rack trave: 19.00

rpm : 450 Rack travel in mm : 5.40...5.60

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 10.10...10.20

2nd speed rpm : 650

Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

rom : 650 Speed

Del.quantity cm3/: 112.0...116.0 1000 s: (110.0...118.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 9.10

rpm : 1095...1105 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 190.0...210.0 1000 s: (185.0...215.0)

LOW IDLE

Speed rpm: 450 Rack travel in mm: 5.40...5.60

Del.quantity cm3/: 17.5...21.5

1000 s: (15.5...23.5)

Remarks:

: JOHN DEERE # RE44344

Start-of-delivery mark at control-rod travel 10.5 mm and 15° after start of

cm3 : 6.00

1000 s: (8.00)

delivery.

Spread

Starting/full-load transition speed from holding magnet = 450 1/min.

**APPLICATION** 

Excavator

#### Note remarks

Test sheet

: DEE

Edition

: 13.03.92

Replaces

Test oil

: ISO-4113

Combination no. : 0 400 876 395

Injection pump

Pump designation: PES6A100D410RS2676

EP type number

: 9 410 230 023

Governor

Governor design.

: RSV425...1100A2C2161

-1L

Governer no.

: 9 420 234 133

Customer-spec. information Customer

: JOHN DEERE

Engine

: 6466T

1st version kW

: 120.0

Rated speed

: 2200

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 101

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test Lines

: 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00X2.00X600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

M10

: 2.45...2.55 : (2.40...2.60) Prestroke mm

Rack travel in mm: 10.50

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

# BASIC SETTING

1st speed

rpm: 1100

Rack travel in mm : 9.40...9.50

Del.quantity cm3/: 9.8...10.0

100 s: (9.6...10.2)

Spread

cm3 : 0.4

100 s: (0.6)

rom: 425.0 2nd speed

Rack travel in mm: 5.3...5.5 Del.quantity cm3/: 2.0...2.4

100 s: (1.8...2.6)

Spread

cm3 : 0.6100 s: (0.8)

# GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Spread

rpm : 1100

Aneroid pressure h: 700

Del.quantity

: 98.5...100.5

1000 : (96.5...102.5)

: 4.00 cm3

1000 : (6.50)

#### RATED SPEED

1st version

Control Lever

position degrees: 46...54

Testina:

1st rack travel in: 8.40

: 1145...1155 Speed rpm

2nd rack travel in: 4.00

rom : 1205...1215 Speed

3rd rack travel in: 4.00

: 1195...1225 rpm Speed

4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control Lever

position degrees: 24...32

Setting point w/out bumper spring

rpm : 425 Rack travel in mm: 4.9

Testing:

rpm ; 100 Speed

Minimum rack trave: 19.00

rpm : 425 Speed Rack travel in mm: 5.30...5.50

TORQUE CONTROL

Torque control curve – 1st version

1st speed rpm : 1100

Rack travel in m: 9.40...9.40

2nd speed rpm : 750

Rack travel in m: 10.60...10.89

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rom : 500 hPa : 700 Pressure

: 10.60...10.80 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.10...9.30

2nd pressure hPa : 80

Rack travel in m: 9.40...9.80

3rd pressure hPa : 175

Rack travel in m: 10.30...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

rpm : 750 Speed

Del.quantity cm3/: 116.0...119.0 1000 s: (114.0...121.0)

Aneroid pressure h: -

rpm : 500 Speed

**BREAKAWAY** 

1st version

imm rack travel less than

full load rack tr: 8.40

rpm : 1145...1155 Speed

Del.quantity cm3/: 86.0...90.0 1000 s: (84.0...92.0)

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 190.0...210.0 1000 s: (185.0...215.0)

LOW IDLE

rpm : 425

Speed

Rack travel in mm: 5.30...5.50 Del.quantity cm3/: 20.5...24.5 1000 s: (18.5...26.5)

cm3 : 6.00Spread

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE23746

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark = 15.5° after start of delivery cyl. 1.

Note remarks

Test sheet : DAF 11.6 1/1 Edition : 18.12.91 Replaces : 10.85 Test oil : ISO-4113

Combination no. : 0 401 846 512

Injection pump

Pump designation : PE6P120A320RS415-1

EP type number : 0 411 826 123

Governor

Governor design. : RQ250/1100PA417R Governor no. : 0 421 801 084

Customer—spec. information Customer : DAF

Engine : DKX 1160

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

**Opening** 

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 11.60...11.70

Del. quantity cm3/: 18.7...18.9

100 s: (18.4...19.2)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm : 6.7...6.9 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 Speed rpm : 700

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 850 Aneroid pressure h: 700

Del.quantity : 187.0...189.0 1000 : (184.0...192.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm: 700 Rack travel in mm: 16.0

Testing:

1st rack travel in: 10.60

Speed rpm : 1125...1140

2nd rack travel in: 4.00

Speed rpm : 1190...1220

4th rack travel in: 1300

Speed rpm : 0.00...1.00

M12

LOW IDLE 1

Setting point w/cut bumper spring

rpm : 250 Rack travel in mm: 6.5

Testing:

rpm : 100 Speed Minimum rack trave: 7.40 Speed rpm : 250

Rack travel in mm: 6.40...6.60 Rack travel in mm: 2.00 rpm : 450...490 Speed

TORQUE CONTROL

Dimension a mm : 0.55

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 12.60...12.70

2nd speed rpm : 1080

Rack travel in m: 12.50...12.70

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 600 Speed hPa : 700 Pressure

Rack travel mm : 11.60...11.70

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 10.30...10.50

2nd pressure hPa : 300 Rack travel in m: 11.30...11.40

3rd pressure hPa : 250

Rack travel in m: 10.60...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 600 Speed

Del.quantity cm3/: 140.0...142.0

1000 s: (137.0...145.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.60

rpm : 1125...1140 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 305.0...345.0

1000 s: (305.0...345.0) Rack travel in mm: 19.50...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 6.40...6.60

Remarks:

Note remarks

: STE 9,7 f 1 Test sheet Edition : 24.02.89

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 846 554

Injection pump

Pump designation : PE6P110A720RS516 EP type number : 0 411 816 176

Governor

Governor design. : RQ300/1100PA412-2 : 0 421 801 435 Governer no.

Customer-spec. information : STEYR Customer

: WD615.64 Engine

: 175.0 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. ro. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 14.40...14.50

Del.quantity cm3/: 14.2...14.4

100 s: (13.9...14.7)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 300.0 2rid speed Rack travel in mm : 6.4...6.6 Del.quantity cm3/: 1.9...2.4

100 s: (1.6...2.6)

Spread cm3 : 0.4100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 900

: 142.0...144.0 1000 : (139.0...147.0) Del.quantity

: 4.00 cm3

Spread 1000 : (7.50)

RATED SPEED

1st version

Setting point:

: 600 Speed rpm Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.40

rpm : 1145...1160 Speed

2nd rack travel in: 4.00

rpm : 1245...1275 Speed

M14

4th rack travel in: 1400

rpm : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

rom : 300 Rack travel in mm: 6.5

Testing:

rpm : 100 Speed Minimum rack trave: 8.00 : 300 rpm

Rack travel in mm : 6.40...6.60

Rack travel in mm: 2.00 rpm : 400...440 Speed

TORQUE CONTROL

Dimension a mm : 0.25

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 14.40...14.50

2nd speed rpm : 700

Rack travel in m: 15.60...15.80

3rd speed rpm : 1000

Rack travel in m: 14.60...14.80

4th speed rpm : 860 Rack travel in m: 15.20...15.40

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed MC hPa : 900 Pressure

: 15.60...15.80 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 12.90...13.10

2nd pressure hPa : 575
Rack travel in m: 15.00...15.10
3rd pressure hPa : 310
Rack travel in m: 13.60...13.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm: 700
Del.quantity cm3/: 160.0...164.0
1000 s: (157.0...167.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 116.0...118.0

1000 s: (113.0...121.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 13.40

mpan : 1145...1160 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 175.0...195.0 1000 s: (171.0...199.0)

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 19.0...24.0

1000 s: (16.5...26.5)

cm3 : 4.50 Spread

1000 s: (7.50)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

#### Note remarks

: VOL 12,2 a1 : 29.04.91 Test sheet Edition : 02.10.89 Replaces : ISO-4113 Test oil

: 0 401 846 826 Combination no.

Injection pump

Pump designation : PE6P120A320RS3178 : 0 411 826 752 EP type number

Governor

: RQV250...1025PA657-Governor design.

10

: D 421 813 567 Governer no.

Customer-spec. information Customer : VOLVO

: TD122FS Engine

: 287.0 1st version kW : 2050 Rated speed

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C . 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

**Opening** 

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 3.60...3.70 : (3.55...3.75)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 25.2...25.4

100 s: (24.9...25.7)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm : 4.8...5.1 Del.quantity cm3/: 1.8...2.3

100 s: (1.5...2.5)

cm3 : 0.5Spread 100 s: (0.7)

## (B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed : 1.00...1.40 travel mm

rpm : 450 2nd speed

: 3.60...4.20 travel mm

rpm : 800 3rd speed

: 6.30...6.70 travel mm rpm : 1070 4th speed

travel mm

: 8.00...8.20 : 1150 5th speed rpm

: 9.30...9.70 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1090

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Aneroid pressure h: 1200

: 252.0...254.0 Del.quantity

1000 : (249.0...257.0) cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version Control lever

position degrees: 61...69

Testing:

1st rack travel in: 13.00 Speed rpm : 1055...1065

2nd rack travel in: 4.00

rpm : 1140...1170 Speed

4th rack travel in: 1250

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 6...14

Testing:

: 100 (Din Speed Minimum rack trave: 6.40

: 250 Speed mon

Rack travel in mm : 4.80...5.10

CONSTANT REGULATION

rpm : 250...400 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

pm : 500 hPa : 1200 Speed rpm Pressure

: 14.00...14.10 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.00...10.20

2nd pressure hPa : 120 Rack travel in m: 10.20...10.30

3rd pressure hPa : 810

Rack travel in m: 13.30...13.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 700 Speed

Del.quantity cm3/: 163.0...165.0

1000 s: (160.0...168.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

: 1055...1065 Speed המח

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 220.0...240.0 1000 s: (216.0...244.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

: 250 Speed rpm

Rack travel in mm : 4.80...5.10

Del.quantity cm3/: 18.0...23.0

1000 s: (15.5...25.5) cm3 : 5.00

Spread 1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Note remarks

: VOL 12,2 d : 29.11.91 Test sheet Edition : 22.3.91 Replaces : ISO-4113 Test oil

: 0 401 846 900 Combination no.

Injection pump

Pump designation : PE6P120A320RS3240 : 0 411 826 786 EP type number

Governor

: RQV250...1025PA921 Governor design.

-16

: 0 421 813 799 Governer no.

Customer—spec. information

Customer : VOLVO-TRUCK.

Engine : TD122FL

: 298.0 1st version kW : 2050 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

**Opening** 

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 13.60...13.70

Del.quantity cm3/: 25.1...25.3

100 s: (24.8...25.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 6.5...6.7 Del.quantity cm3/: 1.7...2.2

100 s: (1.5...2.5)

cm3 : 0.5Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

1.00...1.40 travel mm

rpm : 450 2nd speed

: 3.60...4.20 travel mm

rpm : 800 3rd speed

: 6.30...6.70 travel mm

: 1070 4th speed rpm

: 8.00...8.20 travel mm

rpm : 1150 5th speed

: 9.30...9.70 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

M18

Aneroid pressure h: 1200

: 251.0...253.0 Del.quantity 1000 : (248.0...256.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testing:

1st rack travel in: 12.60

rpm : 1065...1075 Speed

2nd rack travel in: 4.00

Speed rpm : 1140...1170 4th rack travel in: 1250

npm : 0.00...1.00Speed

LOW IDLE 1

Control Lever

position degrees: 60...68

Testing:

: 100 Speed mom

Minimum rack trave: 8.10 rpm : 250

Rack travel in mm : 6.50...6.70

CONSTANT REGULATION

rom : 250...380 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 1200 Pressure

: 13.60...13.70 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.90...10.10

2nd pressure hPa : 90 Rack travel in m: 10.10...10.20

3rd pressure hPa : 800

Rack travel in m: 13.30...13.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700

Del.quantity cm3/: 154.0...156.0 1000 s: (151.0...159.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 12.60

rpm : 1065...1075 Speed

STARTING FUEL DELIVERY

: 100 men

Del.quantity cm3/ : 270.0...310.0

1000 s: (266.0...314.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 250 Speed

Rack travel in mm : 6.50...6.70

Del.quantity cm3/: 17.5...22.5 1000 s: (15.0...25.0)

cm3 : 5.00 Spread

1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Start-of-delivery setting with ROBO

disphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : VOL 12,2 k : 29.11.91 : 23.10.91 Test sheet Edition Replaces : ISO-4113 Test oil Combination no. : 0 401 846 961 Injection pump Pump designation : PE6P120A320RS3292 : 0 411 826 804 EP type number Governor Governor design. : RQV300...1050PA1020 : 0 421 813 976 Governer no. Customer-spec. information Customer : VME : TD122 GH 3049 Engine : 207.0 1st version kW : 2100 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 457 413 010 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 019 **Openina** : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Outside diameter x Wall thickness : 6.00x1.50x1000 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

: 3.60...3.70 Prestroke mm : (3.55...3.75) Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order : 0-60-120-180-240-300 Phasing : 0.50 (0.75) Tolerance + - ° Time to cyl. no. : 1 BASIC SETTING 1st speed rpm : 1050Rack travel in mm : 11.60...11.70 Del.quantity cm3/: 20.5...20.7 100 s: (20.2...21.0) cm3 : 0.5Spread 100 s: (0.9) rpm : 300.02nd speed Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 3.3...3.8 100 s: (3.0...4.0) cm3 : 0.5Spread 100 s: (0.7) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : : 1.30...1.70 travel mm 2nd speed : 450 man 2.40...3.00 travel mm : 700 3rd speed ממח 4.30...4.90 travel mm 1100 4th speed rpm : 7.80...8.00 travel mm : 1200 5th speed rpm : 8.80...9.20 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1
Speed rpm: 1120
Rack travel in mm: 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1050

Speed

Aneroid pressure h: 1200

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 205.0...207.0 Del.quantity 1000 : (202.0...210.0) : 5.00 cm3Spread 1000 : (9.00)PATED SPEED 1st version Control lever position degrees: 114...122 Testing: 1st rack travel in: 10.60 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 Speed rpm : 1170...1200 4th rack travel in: 1300 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 88...96 Testing: : 100 Speed rpm Minimum rack trave: 7.60 rpm : 300 Rack travel in mm: 6.00...6.20 CONSTANT REGULATION rpm : 300...420 Speed TORQUE CONTROL : 1.30 Dimension a mm Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 11.60...11.70 2nd speed rpm: 550 Rack travel in m: 12.90...13.10 3rd speed rpm : 650 Rack travel in m: 12.60...12.80 Aneroid/Altitude Compensator Test 1st version Setting rom : 500 hPa : 1200 Speed man Pressure Rack travel mm : 12.90...13.10

Measurement  $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 11.60...11.90 2nd pressure hPa : 530

Rack travel in m: 11.80...11.90

START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm: 550
Del.quantity cm3/: 243.0...249.0
1000 s: (240.0...252.0) Aneroid pressure h: -Speed rpm : 550 Del.quantity cm3/: 208.0...210.0 1000 s: (205.0...213.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.60 rpm : 1090...1100 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 160.0...190.0 1000 s: (156.0...194.0) Rack travel in mm : 20.00...21.00 LOW IDLE : 300 Speed rpm Rack travel in mm : 6.00...6.20 Del.quantity cm3/: 33.0...38.0 1000 s: (30.5...40.5) cm3 : 5.00 1000 s: (7.00) Spread

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm. Permissible alteration from 2.20...2.90

Note remarks

Test sheet

: DAF

Edition

: 30.04.92

Replaces

Test oil

: ISO-4113

Combination no. : 0 401 846 964

Injection pump

Pump designation : PE6P110A320RS3302

EP type number

: 0 411 816 181

Governor

Governor design. : RQ300/1000PA1012-1

Governer no.

: 0 421 801 648

Customer-spec. information Customer

: DAF

Engine

: LT 195 L

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 101

Opening.

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test Lines

: 1 680 750 089

Outside diameter

x Wall thickness

x Length mm

: 8.00X2.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 14.00...15.00

M22

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - \*

: 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 3.90...4.10 & maximum rack tra: 13.9...14.9

Difference \* CS : 3.00...5.00

BASIC SETTING

1st speed

rpm: 850

Rack travel in mm : 14.40...14.50

Del.quantity cm3/: 17.3...17.5

100 s: (17.0...17.7)

Spread

cm3 : 0.4

100 s: (0.7)

rpm : 300.0 2nd speed

Rack travel in mm: 5.5...5.7 Del.quantity cm3/: 1.6...2.1

100 s: (1.4...2.4)

cm3 : 0.4 Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 850

Aneroid pressure h: 1000 Del.quantity

: 173.0...175.0

1000 : (170.5...177.5)

Spread

: 4.00 cm3

1000 : (7.50)

RATED SPEED

1st version

Speed

Setting point:

: 600 rpm

Rack travel in mm: 20.0

Testing:

1st rack travel in: 13.40

rpm : 1025...1040 Speed

2nd rack travel in: 4.00

Speed rpm : 1105...1135 4th rack travel in: 1300

rpm : 0.00...1.50 Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 5.6

Testing:

Speed rpm : 100 Minimum rack trave: 10.00 : 300 rpm

Rack travel in mm: 5.50...5.70
Rack travel in mm: 2.00
Speed rpm: 330...370

TORQUE CONTROL

Dimension a mm

Tarque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 15.10...15.20

2nd speed rpm : 1000

Rack travel in m: 15.00...15.20

Ameroid/Altitude Compensator Test

1st version

Settira

: 600 Speed rpm hPa : 1000 Pressure

: 14.40...14.50 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 12.30...12.50

2nd pressure hPa : 530

Rack travel in m: 13.90...14.00

3rd pressure hPa : 380

Rack travel in m: 12.90...13.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 600 Speed

Del.quantity cm3/: 131.0...133.0

1000 s: (128.5...135.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 13.40

rpm : 1025...1040 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 330.0...370.0 1000 s: (327.0...373.0)

Rack travel in mm: 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 16.5...21.5
1000 s: (14.0...24.0)

cm3 : 4.50 Spread

1000 s: (7.50)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

#### Note remarks

: MWM 17,6 b1 Test sheet : 30.04.92 Edition : 10.83 Replaces

: ISO-4113 Test oil

Combination no. : 0 401 870 070

Injection pump

Pump designation: PE12P110A520/5RS4C8

: 0 411 810 039 EP type number

Governor

Governor design. : RSUV300...1150P0A324

DR

: 0 421 831 908 Coverner no.

Customer spec. information : MUM Customer

: D, DT, TBD232V12 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00 1- 12- 9- 4- 5- 8-Firing order

11-2-3-10-7-6

: 0-30-60-90-120-150-Phasing

180-210-240-270-300-

330

: 0.50 (0.75) Tolerance + - \*

BASIC SETTING

rpm: 1150 1st speed

Rack travei in mm : 12.20...12.30

Del.guantity cm3/: 13.6...13.9

100 s: (13.3...14.1)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 300.0 Rack travel in mm : 7.2...7.4

Del.quantity cm3/ : 2.3...2.9

100 s: (2.0...3.1) cm3 : 0.4

Spread 100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

: 136.0...139.0 Del.quantity 1000 : (133.5...141.5)

cm3 : 4.00 Spread

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 57...65

Testing:

1st rack travel \*: 11.20

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

rpm : 1235...1265 Speed

4th rack travel in: 1400

: 0.30...1.70 Speed rom

LOW IDLE 1 Control lever

position degrees: 17...25

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.8
Speed rpm : 300
Rack travel in mm : 6.70...6.90
Rack travel in mm : 2.00
Speed rpm : 320...380

# BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.20 Speed rpm : 1190...1200 Speed

.

Remarks:

Note remarks

: LIE Test sheet

: 30.04.92 Edition

Replaces : ISO-4113 Test oil

: 0 401 876 791B Combination no.

Injection pump

Pump designation : PE6P110A320LS3859

: 0 411 816 784 EP type number

Governor

Governor design. : RSV400...900P1A554

: 0 421 833 376 Governer no.

: 9273092 Cust, part no.

Customer-spec. information

: LIEBHERR Customer

: D 9306 TI Engine

: 230.0 1st version kW

: 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test Lines : 1 680 750 089

Outside diameter

x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.60...3.70 Prestroke mm : (3.55...3.75)

Rack travel in mm : 9.00...12.00 Firing order : 1-6-3-5-2-4

Firing order

: 0-75-120-195-240-315 Phasing

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in 1.m: 14.50...14.60

Del.guantity cm3/: 19.5...19.7

100 s: (19.2...19.9)

cm3 : 0.4Spread

100 s: (0.7)

npm : 400.02nd speed

Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 1.2...1.7

100 s: (0.9...1.9)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position Dearee: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed Aneroid pressure h: 1300

: 4.00 cm3 Spread

1000 : (7.50)

RATED SPEED

1st version

Control Lever

position degrees: 96...102

Testing:

1st rack travel in: 13.50 rpm : 930...940 Speed 2nd rack travel in: 4.00 rpm : 980...1020 Speed 3rd rack travel in: 4.00 Speed rpm : 1020...1040 4th rack travel in: 1260 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 74...80 Setting point w/out bumper spring : 400 Speed rpm Rack travel in mm : 5.7 Speed rpm: 400
Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00
Speed rpm : 450...510 Speed Aneroid/Altitude Compensator Test 1st version Setting rom : 550 hPa : 1300 Speed rpm Pressure : 14.50...14.60 Rack travel mm Measurement  $1/\min : 550$ Speed 1st pressure hPa : -Rack travel in m: 13.70...13.80 2nd pressure hPa : 710 Rack travel in m: 14.00...14.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -Speed rpm : 550
Del.quantity cm3/ : 177.5...179.5
1000 s: (175.0...182.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.50 rom: 930...940 Speed

STARTING FUEL DELIVERY

COM

Speed

M27

: 100

Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0)

LOW IDLE

rpm : 400 Speed Rack travel in mm : 5.90...6.10

Del.quantity cm3/: 12.0...17.0 1000 s: (9.5...19.5) Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

Note remarks

Test sheet : FIA 7,7 b
Edition : 30.04.92
Replaces : 10.91
Test oil : ISO-4113

Combination no. : 0 402 046 343

Injection pump

Pump designation : PES6P120A720RS3275

EP type number : 0 412 026 745

Governor

Governor design. : RQV300...1100PA954-1

K

Governer no. : 0 421 815 273

Customer—spec. information Customer : IVECO-UNIC

Engine : 8360.46.016

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

**Opening** 

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm: 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \cdot : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 18.3...18.5

100 st (18.0...18.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0
Rack travel in mm : 4.2...4.6
Del.quantity cm3/ : 2.0...2.6

100 s: (1.7...2.9) Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1145

travel mm : 10.60...10.80

2nd speed rpm : 300

travel mm : 1.00...1.40

3rd speed rpm: 850

travel mm : 6.60...7.00

4th speed rpm : 1350

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 900

Aneroid pressure h: 1000

Del.quantity : 183.0...185.0

1000 : (180.0...188.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 115...123

Testina:

1st rack travel in: 10.10 Speed rpm : 1170...1180 2nd rack travel in: 4.00

rom: 1225...1255 Speed

4th rack travel in: 1400

rpm : 0.00...1.00Speed

LOW IDLE 1

Control Lever

position degrees: 73...81

Testing:

: 100 Speed MCC Minimum rack trave: 5.90 : 325 Speed MOM

Rack travel in mm : 4.30...4.50

CONSTANT REGULATION

rpm : 320...440 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 11.50...11.60

2nd speed rpm : 1100

Rack travel in m: 11.00...11.20 3rd speed rpm : 700 Rack travel in m: 10.90...11.10

4th speed rpm : 350 Rack travel in m: 9.00...9.40

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 900 hPa : 1000 Pressure

: 11.50...11.60 Rack travel mm

Measurement

Speed 1/min: 900

1st pressure hPa : -

Rack travel in m: 8.40...8.60

2nd pressure hPa : 550
Rack travel in m: 10.40...10.50

3rd pressure hPa : 320

Rack travel in m: 9.10...9.30

START CUT-OUT

1/min: 275 (295) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

: 1100 Speed rpm

Del.quantity cm3/: 170.0...176.0 1000 s: (167.0...179.0)

Aneroid pressure h: 1000

: 700 Speed rpm

Del.quantity cm3/: 164.0...170.0

1000 s: (161.0...173.0)

Aneroid pressure h: rpm\_ : 500 Speed

Del.quantity cm3/: 95.0...97.0 1000 s: (92.0...100.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

rpm : 1170...1180 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 100.0...120.0 1000 s: (96.0...124.0)

LOW IDLE

Speed rpm : 325 Rack travel in mm : 4.20...4.60

Del.quantity cm3/: 20.0...26.0

1000 s: (17.0...29.0)

cm3 : 8.00

1000 s: (12.00)

Remarks:

Spread

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

Test sheet : DEE 7,6 y 1 Edition : 30.04.92 : 08.90 Replaces : ISO-4113 Test oil

Combination no. : 0 402 076 722

Injection pump

Pump designation : PES6P120A72GRS3205 : 0 412 026 728 EP type number

Governor

Governor design. : RSV400...1100P2A534

: 0 421 833 275 Governer no.

Customer-spec. information : JOHN DEERE Customer

: 6076 HF Engine

: 205.0 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x3.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.55...3.65 : (3.50...3.70) Prestroke mm

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 16.8...17.0

100 s: (16.6...17.2)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 400.02nd speed Rack travel in mm : 5.2...5.4 Del.quantity cm3/: 2.0...2.4

100 s: (1.8...2.6)

cm3 : 0.6Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 1200

Del.quantity : 100.0...172.0)

Spread cm3 : 4.00 : (6.50) 1000

RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:

1st rack travel in: 11.50 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 Speed rpm : 1185...1195

3rd rack travel in: 4.00

Speed rpm : 1185...1215

4th rack travel in: 1300 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever

position degrees: 12...20 Setting point w/out bumper spring rpm : 400

Rack travel in mm: 4.8

Testing: : 100 חיים Speed Minimum rack trave: 19.00 : 400 Speed והכרו Rack travel in mm : 4.70...4.90

TORQUE CONTROL Torque control curve - 1st version rpm : 1100 1st speed

Rack travel in m: 12.50...12.60 2nd speed rpm : 750 Rack travel in m: 13.00...13.20

Aneroid/Altitude Compensator Test

1st version Setting : 500 Speed man hPa : -Pressure

: 10.70...10.90 Rack travel mm

Measurement 1/min: 500 Speed

1st pressure hPa : 585 Rack travel in m: 11.10...11.20

2nd pressure hPa : 770 Rack travel in m: 12.20...12.60

3rd pressure hPa : 1200 Rack travel in m: 13.00...13.20

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1200 rpm : 750 Del.quantity cm3/: 174.5...178.5 1000 s: (172.5...180.5)

Aneroid pressure h: rpm : 800 Speed

Del.quantity cm3/: 117.5...121.5 1000 s: (114.5...124.5)

**BREAKAWAY** 

1st version imm rack travel less than

full load rack tr: 11.50 rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

LOW IDLE

Speed rpm : 400 Rack travel in mm : 5.20...5.40 Del.quantity cm3/: 20.0...24.0 1000 s: (18.0...26.0)

cm3 : 6.00Spread 1000 s: (8.00)

Remarks:

: JOHN DEERE # RE32035 Adjustment without torque-control spring retainer with 0,5 mm less

control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1

Note remarks

: DEE 10,1 g : 30.04.92 Test sheet **Edition** : 11.90 Replaces : ISO-4113 Test oil

Combination no. : 0 402 076 730

Injection pump

Pump designation : PES6P110A720RS3217 : 0 412 016 724 EP type number

Governor

Governor design.: RSV550...1050P2A534-

: 0 421 833 304 Governer no.

Customer-spec. information Customer : JOHN DEERE

: 6619AT07 Engine

: 205.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 33...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 103 assembly

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.7

: 1 680 750 008 Test Lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm Rack travel in mm: 10.50

: 3.45...3.55 : (3.40...3.60)

Firing order

: 1-5- 3- 6- 2- 4

Phasing

: 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

rom : 10501st speed

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 18.3...18.5

100 s: (18.1...18.8)

Spread

cm3 : 0.4

100 s: (0.6)

rpm : 550.0 2nd speed

Rack travel in mm: 52...5.4 Del.quantity cm3/: 3.3...3.7

100 s: (3.1...3.9)

Spread

cm3 : 0.6 100 s: (0.8)

GLIDE SLEEVE POSITION

Control-Lever position Degree: -3

rpm : 800

Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050Speed

Aneroid pressure h: 900

Del.quantity : 183.3....188.0)

cm3 : 4.00

1000 : (6.50)

RATED SPEED

Spread

1st version

Control lever

position degrees: 41...49

NO4

Testina: 1st rack travel in: 11.10 npm : 1095...1105 Speac 2nd rack travel in: 4.00 rpm : 1180...1190 Speed 3rd rack travel in: 4.00 Speed rpm : 1195...1215 4th rack travel in: 1350 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 22...30 Setting point w/out bumper spring rpm : 550 Rack travel in mm: 4.8 Testing: Speed : 100 וחכרו Minimum rack trave: 19.00 Speed rpm: 550 Rack travel in mm: 5.20...5.40 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed COL hPa : 900 Pressure : 12.10...12.20 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.60...10.80 2nd pressure hPa : 295 Rack travel in m: 11.00...11.10 3rd pressure hPa : 510 Rack travel in m: 11.70...12.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 167.0...171.0 1000 s: (165.0...173.0) **BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.10 Speed rpm : 1095...1105

NO5

#### STARTING FUEL DELIVERY

#### LOW IDLE

Speed rpm : 550
Rack travel in mm : 5.20...5.40
Del.quantity cm3/: 33.0...37.0
1000 s: (31.0...39.0)
Spread cm3 : 6.00
1000 s: (8.00)

## Remarks:

: JOHN DEERE # RE36078

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

#### APPLICATION

Excavator

Note remarks

Test sheet

: DEE

Edition

: 30.04.92

Replaces

Test oil

: ISO-4113

Combination no.

: 0 402 076 745

Injection pump

Pump designation : PES6P120A720RS3203

EP type number

: 0 412 026 728

Governor

Governor design.

: RSV625...1100P2A534-

Governer no.

: 0 421 833 372

Customer-spec. information

Customer

: JOHN DEERE

Engine

: 6076 HZ 031

1st version kW

: 205.0

Rated speed

: 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 101

Opening 1 4 1

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test Lines

: 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

: 6.00X3.00X600

(A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values \_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Phasing

Prestroke mm

Firing order

: 0-60-120-180-240-300

: 1-5- 3- 6- 2- 4

Tolerance + - °

: 0.50 (0.75)

: 3.55...3.65 : (3.50...3.70)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1100

Rack travel in mm : 9.00...12.00

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 17.4...17.6

100 s: (17.2...17.8)

Spread

Spread

cm3 : 0.4

100 s: (0.6)

rpm : 625.0 2nd speed Rack travel in mm: 5.4...5.6

Del.quantity cm3/ : 2.7...3.1

100 s: (2.5...3.3)

cm3 : 0.6 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rom : 1100

Aneroid pressure h: 1200 Del.quantity : 1(4.3....178.5)

: 4.00 cm3 Spread

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 39...47

N06

Testina: 1st rack travel in: 11.70 rpm : 1140...1150 Speed 2nd rack travel in: 4.60 rpm : 1205...1215 Speed 3rd rack travel in: 4.00 Speed rpm : 1195...1225 4th rack travel in: 1350 rom : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 22...30 Setting point w/out bumper spring Speed rom: 625 Rack travel in mm: 5.0 Testing: : 100 Speed **FDM** Minimum rack trave: 19.00 Speed : 625 rpm Rack travel in mm : 5.40...5.60 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 12.70...12.80 2nd speed rpm : 700 Rack travel in m: 13.40...13.60 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 1200 Pressure Rack travel mm : 13.40...13.60 Measurement  $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 11.50...11.70 2nd pressure hPa : 645 Rack travel in m: 12.10...12.20 3rd pressure hPa : 840 Rack travel in m: 12.90...13.30 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200

: 700

: 800

1000 s: (185.0...193.0)

rpm Del.quantity cm3/: 187.0...191.0

rpm

Aneroid pressure h: -

Del.quantity cm3/: 143.0...147.0 1000 s: (141.0...149.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.70 rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm Del.quantity cm3/: 90.0...110.0 1000 s: (85.0...115.0) Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 625
Rack travel in mm : 5.40...5.60
Del.quantity cm3/: 27.0...31.0 1000 s: (25.0...33.0) Spread cm3 : 6.001000 s: (8,00)

Remarks:

: JOHN DEERE # RE47399

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1

Speed

Speed

#### Note remarks

: MB 22,0 c 2 : 30.04.92 Test sheet Edition : 06.91 Replaces : ISO-4113 Test oil

: 0 402 640 828 Combination no.

Injection pump

Pump designation : PE12P120A520LS7826 EP type number : 0 412 620 817

Governor

: RQV350...1050PA870 Governor design.

-13

: 0 421 813 934 Governer no.

Customer-spec. information

: MERCDES-BENZ Customer

: OM 444 LA Engine

1st version kW : 620.0 : 2100 Rated speed

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 019 assembly

**Opening** 

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 4.40...4.50 : (4.35...4.55)

Rack travel in mm : 19.00...21.00 Firing order : 12-1-5-9-8-3-4-11-10-2-6-7

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 14.00...14.10

Del.quaritity cm3/: 27.4...27.6

100 s: (27.1...27.9)

cm3 : 0.6Spread

100 s: (1.0)

rpm : 350.02nd speed Rack travel in mm: 5.3...5.9

Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 1.30...1.80 travel mm

rpm : 570 2nd speed

: 3.30...3.80 travel mm : 900 3rd speed rpm

travel mm : 5.40...5.90

: 1107 4th speed rpm

: 7.80...8.30 travel mm

: 1204 5th speed rpm

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1175 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 1800

Del.quantity : 274.0...276.0

1000 : (271.0...279.0)

cm3Spread : 6.00 1000 : (10.00)

RATED SPEED

1st version Control lever

position degrees: 114...122

Testing:

1st rack travel in: 13.00

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1170...1200 Speed

4th rack travel in: 1250

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 59...67

Testing:

Speed rpm Minimum rack trave: 7.30

: 350 man Rack travel in mm : 5.30...5.90

CONSTANT REGULATION

rpm : 350...690 Speed

Aneroid/Altitude

Compensator Test

1st version

Setting

: 500 Speed rom

hPa : -Pressure

: 8.20...8.50 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : 300

Rack travel in m: 9.60...9.70 2nd pressure hPa : 1100

Rack travel in m: 13.80...14.10

START CUT-OUT

1/min: 310 (330) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800

Speed rpm : 750
Del.quantity cm3/: 271.0...275.0
1000 s: (268.0...278.0)

cm3 : 10.00Spread

1000 s: (15.0)

Aneroid pressure h: -: 500 Speed rpm

Del.quantity cm3/: 124.0...126.0 1000 s: (121.0...129.0)

cm3 : 10.00 Spread

1000 s: (15.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 13.00

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 330.0...350.0 1000 s: (326.0...354.0)

Remarks:

N09

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : STE 9,7 d Test shect : 30.04.92 Edition : 09.86 Replaces : ISO-4113 Test oil : 0 402 646 830 Combination no. Injection pump Pump designation : PE6P120A720RS7118 EP type number : 0 412 626 811 Governor Governor design. : RG300/1100PA784 : 0 421 801 337 Governer no. Customer-spec. information Customer : STEYR Engine : WD615.68 1st version kW : 228.0 : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0.8 Test Lines : 1 680 750 067 Outside diameter x Wall thickness : 6.00x1.50x1000 x Length mm (A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm : (4.95...5.15) Rack travel in mm : 9.00...12.00 : 1-5- 3- 6- 2- 4 Firing order : 0-60-120-180-240-300 Phasing Tolerance + - ° ± 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING rom: 1100 1st speed Rack travel in mm : 12.70...12.80 Del.guantity cm3/: 18.1...18.3 100 s: (17.8...18.6) cm3 : 0.5Spread 100 s: (0.9) rpm : 300.0 2nd speed Rack travel in mm: 4.5...4.7 Del.quantity cm3/: 1.5...2.1 100 s: (-) cm3 : 0.8Spread 100 s: (1.2) GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 600 Speed Rack travel in mm : 15.20...16.40 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1100 Speed Aneroid pressure h: 1200 : 181.0...183.0 Del.quantity 1000 : (178.0...186.0) : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Setting point: Speed rpm Rack travel in mm: 15.8 Testing: 1st rack travel in: 11.70

rpm : 1145...1160 Speed

2nd rack travel in: 4.00

rpm : 1205...1235 Speed

4th rack travel in: 1300

rom : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Speed Rack travel in mm: 4.6

Testing:

rpm : 100 Speed Minimum rack trave: 6.00 : 300 rpm

Rack travel in mm : 4.50...4.70

Rack travel in mm : 2.00

rpm : 360...400 Speed

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed mgn hPa : 1200 Pressure

: 12.70...12.80 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 10.20...10.40

2nd pressure hPa : 570

Rack travel in m: 12.10...12.20

3rd pressure hPa : 360

Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

: 700 Speed rom

Del.quantity cm3/: 190.0...196.0 1000 s: (187.0...199.0)

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/ : 143.0...145.0

1000 s: (140.0...148.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.70

rpm : 1145...1160 Speed

N11

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity\_cm3/ : 225.0...265.0

1000 s: (-)

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : STE 9,7 d 1 : 30.04.92 Test sheet Edition : 09.86 Replaces : ISO-4113 Test oil Combination no. : 0 402 646 831 Injection pump Pump designation : PE6P120A720RS7118 : 0 412 626 811 EP type number Governor Governor design. : RQV250...1100PA785 : 0 421 813 517 Governer no. Customer-spec. information : STEYR Customer : WD615.68 Engine : 228.0 1st version kW Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,8 : 1 680 750 067 Test lines Outside diameter x Wall thickness : 6.00x1.50x1000 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

: 5.00...5.10 Prestroke mm : (4.95...5.15) Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order : 0-60-120-180-240-300 Phasing Tolerance + - " : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING rpm: 1100 1st speed Rack travel in mm : 12.70...12.80 Del.guantity cm3/: 18.1...18.3 100 s: (17.8...18.6) cm3 : 0.5Spread 100 s: (0.9) rpm : 250.0 2nd speed Rack travel in mm: 4.8...5.0 Del.quantity cm3/: 1.5...2.1 100 s: (-) cm3 : 0.8Spread 100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 250 1st speed : 1.20...1.30 travel mm 2nd speed : 350 rpm : 1.80...2.20 travel mm 3rd speed : 410 rpm : 2.30...2.70 rpm : 1150 travel mm 4th speed : 8.40...8.60 travel mm 5th speed rpm : 1240 : 9.50...9.80 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1150 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1100 Speed Aneroid pressure h: 1200

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Det.quantity : 181.0...183.0 1000 : (178.0...186.0)

: 5.00 cm3 Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 102...110

Testing:

1st rack travel in: 11.70

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1225...1255

4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 68...76

Testing:

: 100 Speed **LDW** Minimum rack trave: 6.30 : 250 rom

Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

rpm : 275...375 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed **LDW** 

hPa : 1200 Pressure

: 12.70...12.80 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.30...10.40

2nd pressure hPa : 570

Rack travel in m: 12.10...12.20

3rd pressure hPa : 360

Rack travel in m: 10.80...11.00

START CUT-OUT

1/min: 170 (195) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

N13

Aneroid pressure h: 1200

rpm : 700 Speed

Del.quantity cm3/: 190.0...196.0 1000 s: (187.0...199.0)

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/ : 143.0...145.0

1000 s: (140.0...148.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.70

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 225.0...265.0 1000 s: (221.0...269.0)

Rack travel in mm : 19.50...21.00

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

#### Note remarks

: SCA 11.1 r : 30.04.92 : 05.91 Test sheet Edition | Replaces : ISO-4113 Test oil

: 0 402 646 887 Combination no.

Injection nump

Pump designation : PE6P120A720RS7188 EP type number : 0 412 626 832

Governor

Governor design. : RQV200...950PA725-7

: 0 421 813 803 Governer no.

Customer-spec, information : SCANIA Customer

: DSC 11 23 Engine

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 104 assembly

Openina

: 250...253 pressure, bar

Orifice plate

: 0,7 diameter mm

: 1 680 750 008 Test lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm : (4.35...4.55)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

#### BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.80...13.90

Del.guantity cm3/: 25.1...25.3

100 s: (24.8...25.6)

cm3 : 0.8Spread

100 s: (1.2)

rpm : 250.02nd speed Rack travel in mm: 4.6...5.0 Del.quantity cm3/: 1.4...2.0

100 s: (-) Spread cm3 : 0.4

100 s: (0.8)

## (B) Setting of injection pump with governor

## GUIDE SLEEVE TRAVEL

rpm : 225 1st speed : 1.20...1.60 travel mm

rpm : 350 2nd speed : 2.40...3.00 travel mm

3rd speed rpm : 650

: 4.50...5.10 travel mm rpm : 1045

4th speed : 8.40...8.60 travel mm

: 1125 5th speed rpm

: 9.30...9.70 travel mm

## GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1150 Speed Rack travel in mm : 7.00...12.00

# FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 1500

: 251.0...253.0 Del.quantity

1000 : (248.0...256.0)

cm3 : 8.00Spread

1000 : (12.00)

RATED SPEED

1st version Control lever

position degrees: 110...118

Testina:

1st rack travel in: 12.80 rpm : 990...1000 Speed

2nd rack travel in: 4.00 Speed rpm: 1110...1140

4th rack travel in: 1250

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 60...68

Testing:

: 125 Speed rpm Minimum rack trave: 6.20 rpm : 250 Speed

Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00 Speed rpm : 350...410

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 1500 Pressure

: 13.80...13.90 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 10.20...10.60

2nd pressure hPa : 440

Rack travel in m: 12.00...12.10 3rd pressure hPa : 270

Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

Speed rpm: 950
Del.quantity cm3/: 228.0...236.0
1000 s: (226.0...238.0)

Aneroid pressure h: -: 500 Speed COM

Del.quantity cm3/: 152.0...154.0 1000 s: (149.0...157.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80

rpm : 990...1000 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 150.0...180.0

1000 s: (-)

Rack travel in mm : 10.20...10.60

LOW IDLE

Speed rpm : 250 Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Start-of-delivery setting with ROBO diaphragm.

**APPLICATION** 

Navy

Note remarks

: MB 11,1 c Test sheet : 30.04.92 Edition : 01.92 Replaces : ISO-4113 Test oil

: 0 402 646 921 Combination no.

Injection pump

Pump designation : PE6P120A320LS7837-10

EP type number : D 412 626 855

Governor

Governor design. : RQ300/1050PA972-3

: 0 421 801 565 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M441 LA Engine

: 250.C 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

**Opening** 

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 14.70...14.90

Del.quantity cm3/: 23.4...23.6

100 s: (23.1...23.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm : 5.6...6.2 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 1000

: 234.0...236.0 Del.quantity 1000 : (231.0...239.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rom Rack travel in mm: 20.0 Testing:

1st rack travel in: 13.90

rpm : 1090...1105 Speed

2nd rack travel in: 4.00

Speed rpm : 1185...1215 4th rack travel in: 1300

rpm : 0.00...1.50 Speed

LOW IDLE 1

Setting point w/out bumper spring

rom Rack travel in mm: 5.9

Testing:

rpm : 200 Speed Minimum rack trave: 7.70

: 300 Speed rpm -

Rack travel in mm : 5.60...6.20 Rack travel in mm : 2.00

: 380...420 Speed rpm

TORQUE CONTROL

Dimension a mm

rpm : 1050 2nd speed

Rack travel in m: 14.90...15.10

3rd speed rpm : 800

Rack travel in m: 15.50...15.70

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed rpm hPa : 1000 Pressure

: 14.70...14.90 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : 200

Rack travel in m: 9.80...10.00

2nd pressure hPa : 600

Rack travel in m: 13.70...13.90

3rd pressure hPa : 1250

Rack travel in m: 14.80...15.00 \*

4th pressure hPa : 1400

Rack travel in m: 15.20...15.40

5th pressure hPa : -

Rack travel in m: 9.10...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800

: 1050 Speed rom

Del.quantity cm3/: 235.0...238.0

1000 s: (232.0...241.0)

cm3 : 8.00 Spread

1000 s: (12.0) Aneroid pressure h: 1800

: 800 Speed rpm

Del.quantity cm3/: 248.0...252.0 1000 s: (245.0...255.0)

cm3 : 8.00 1000 s: (12.0)

Aneroid pressure h: -

Speed rom

Del.quantity cm3/: 135.0...137.0

1000 s: (132.0...140.0)

cm3 : 8.00 Spread

1000 s: (12.0)

BREAKAWAY

Spread

1st version

1mm rack travel less than

full load rack tr: 13.90

rpm : 1090...1105 Speed

STARTING FUEL DELIVERY

Speed : 100 rpn

Del.quantity cm3/: 60.0...90.0

1000 s: (56.0...94.0)

Rack travel in mm : 9.10...9.40

Pemarks:

\* Increase in control-rod travel with

respect to setting at least 0.1 mm

Note remarks

: UNI 13,8 h2 Test sheet : 29.11.91 Edition : 8.10.91 Replaces

Test oil : ISO-4113

: 0 402 646 947 Combination no.

Injection pump

Pump designation : PE6P130A720RS7225 : 0 412 636 817 EP type number

Governor

: RQV300...950PA1002 Governor design.

-1K

: D 421 815 280 Governer no.

Customer-spec. information Customer : IVECO-UNIC

: 8210.42.400 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. \*C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0.8 diameter mm

: 1 680 750 015 Test lines

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm: 13.50...14.50

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 950 1st speed

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 30.6...30.9

100 s: (30.2...31.2)

cm3 : 0.6Spread

100 s: (1.0)

rpm : 300.02nd speed Rack travel in mm : 4.8...5.2 Del.quantity cm3/ : 1.9...2.5 100 s: (1.5...2.9)

cm3 : 1.0Spread 100 s: (1.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 995 1st speed

: 8.50...8.70 travel mm rpm : 300 2nd speed

travel mm

: 1.00...1.40 : 500 3rd speed rpm

: 3.30...3.90 travel mm

: 750 4th speed rpm

: 5.80...6.20 travel mm

1300 5th speed rpm : 13.00...14.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1125 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 950 Speed

Aneroid pressure h: 900

Del.quantity : 300.0...307.2 1000 : (302.5...312.5)

cm3 : 6.00 Spread 1000 : (10.00) RATED SPEED 1st version Control Lever position degrees: 112...120 Testing: 1st rack travel in: 12.80 rpm : 990...1000 Speed 2nd rack travel in: 4.00 Speed rpm : 1100...1130 4th rack travel 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 66...74 Testing: rom : 100 Speed Minimum rack trave: 6.50 Rack travel in mm: 4.90...5.10 CONSTANT REGULATION rpm : 340...460 Speed TORQUE CONTROL Dimension a mm : ? Torque control curve - 1st version 1st speed rom : 950 Rack travel in m: 13.80...13.90 d speed rpm : 750 2rid speed Rack cravel in m: 13.70...13.90 3rd speed rpm : 500 Rack travel in m: 12.50...12.70 4th speed rpm : 300 Rack travel in m: 12.10...12.40 Aneroid/Altitude Compensator Test 1st version Setting pm : 950 hPa : 900 Speed rpm Pressure : 13.80...13.90 Rack travel mm Measurement 1/min: 950 Speed

START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 : 500 Speed MCT Del.quantity cm3/: 273.0...279.0 1000 s: (266.5...282.5) Ameroid pressure h: Speed rpm : 500 Del.quantity cm3/ : 195.0...198.0 1000 s: (191.5...201.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.80 rpm : 990...1000 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 140.0...170.0 1000 s: (136.0...174.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 4.80...5.20 Del.quantity cm3/: 19.0...25.0 1000 s: (15.0...29.0) cm3 : 10.00Spread 1000 s: (14,00) Remarks: Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Rack travel in m: 10.80...11.20

1st pressure hPa : -

Rack travel in m: 10.50...10.70

2nd pressure hPa : 560
Rack travel in m: 12.60...12.70
3rd pressure hPa : 350

Note remarks

Test sheet

Edition

: 30.04.92

Replaces

Test oil

: ISO-4113

Combination no.

: 0 402 646 976

Injection pump

Pump designation : PE6P12DA32DLS7846

EP type number

: 0 412 626 865

Governor

Governor design. : RQ300/1050PA1031

Governer no.

: 0 421 801 642

Customer-spec. information

Customer

: MERCEDES-BENZ

Engine

: 0M401 LA

1st version kW

: 230.0

Rated speed

: 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly

: 1 688 901 105

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines

: 1 680 750 075

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order

: 6-3-5-2-4-1

Phasing

: 0-60-120-180-240-300

Tolerance  $+ - \cdot : 0.50 (0.75)$ 

Time to cyl. no. : 6

BASIC SETTING

1st speed

rpm: 700

Rack travel in mm : 13.70...13.90

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

Spread

cm3 : 0.5

100 s: (0.9)

2nd speed

rpm : 300.0

Rack travel in mm : -

Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

Spread

Speed

cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 700

Aneroid pressure h: 1000 Del.quantity

: 229.0...231.0 1000 : (226.0...234.0)

Spread

: 5.00 cm3

1000 : (9.00)

RATED SPEED

1st version

Speed

Setting point:

: 600 rpm

Rack travel in mm : 20.0

N20

Testing: 1st rack travel in: 12.50 rpm : 1090...1105 Speed 2nd rack travel in: 4.00 : 1165...1195 Speed CDM 4th rack travel in: 1300 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 6.8 Testina: rpm : 200 Speed Minimum rack trave: 9.00 rpm : 300 Speed Rack travel in mm : 6.50...7.10 Rack travel in mm : 2.00 rom : 400...440 Speed TORQUE CONTROL Dimension a mm : 0.35 Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 13.40...13.60 2nd speed rpm : 850 Rack travel in m: 13.70...13.90 Aneroid/Altitude Compensator Test 1st version Setting : 700 מוסף Speed Pressure hPa : -: 10.80...11.00 Rack travel mm Measurement 1/min: 700 Speed 1st pressure hPa : 300 Rack travel in m: 11.30...11.50 2nd pressure hPa : 700 Rack travel in m: 13.20...13.40 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed rpm : 1050 Del.quantity cm3/: 216.0...220.0

1000 s: (213.0...223.0)

cm3 : 8.00

rpm : 500

1000 s: (12.0)

Del.quantity cm3/: 124.0...126.0 1000 s: (121.0...129.0) Spread cm3 : 8.00 1000 s: (12.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 12.50 Speed rpm : 1090...1105

Remarks:

N21

Spread

Speed

Aneroid pressure h: -

Note remarks

Test sheet

: 30.04.92 **Fdition** 

Replaces

: ISO-4113 Test oil

: 0 402 646 978 Combination no.

Injection pump

Pump designation: PE6P120A320LS7846

EP type number : 0 412 626 865

Governor

Governor design. : RQ300/950PA1031-1

: 0 421 801 643 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M401 LA Engine

1st version kW : 230.0

: 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0.6 diameter mm

: 1 680 750 075 Test lines

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm: 20.00...21.00

Firing order: 6-3-5-2-4-1

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 6

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 13.70...13.90

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm : ? Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 1000

: 229.0...231.0 Del.quantity

1000 : (226.0...234.0)

: 5.00 cm3Spread 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed

Rack travel in mm: 20.0

Testing: 1st rack travel in: 12.80 rpm : 990...1005 Speed 2nd rack travel in: 4.00 rpm : 1060...1090 Speed 4th rack travel in: 1300 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 6.8 Testing: : 200 Speed rpm Minimum rack trave: 9.00 rpm : 300 Rack travel in mm : 6.50...7.10 Rack travel in mm: 2.00 : 390...430 Speed non Aneroid/Altitude Compensator Test 1st version Setting : 700 Speed rpm hPa : -Pressure : 10.80...11.00 Rack travel mm Measurement 1/min: 700 Speed 1st pressure hPa : 300 Rack travel in m: 11.30...11.50 2nd pressure hPa : 700 Rack travel in m: 13.20...13.40 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed rpm: 950
Del.quantity cm3/: 226.0...230.0
1000 s: (223.0...233.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm Del.quantity cm3/: 124.0...126.0 1000 s: (121.0...129.0) cm3 : 8.00 Spread 1000 s: (12.0)

1st version 1mm rack travel less than

full load rack tr: 12.80 Speed rpm : 990...1005

Remarks:

:

**BREAKAWAY** 

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.30...3.40 Prestroke mm : (3.25...3.45) Rack travel in mm : 12.00...14.00 Note remarks : 1-3-4-2 Firing order : PER 5,8 D Test sheet : 30.04.92 Edition : 03.92 Replaces : 0-90-180-270 : ISO-4113 Phasing Test oil Tolerance + - ° : 0.50 (0.75) : 0 403 444 119 Combination no. Time to cyl. no. : 1 Injection pump Pump designation : PES4MW100/320RS1199 BASIC SETTING : 0 413 404 112 EP type number Governor Governor design. : RQV300...1300MW110K rpm : 13001st speed : 0 420 083 996 Governer no. Rack travel in mm : 13.00...13.10 Customer-spec. information Del.quantity cm3/: 12.4...12.6 Customer : PERKINS 100 s: (12.2...12.8) : 110 11 Engine : 82.0 cm3 : 0.3Spread 1st version kW : 2600 Rated speed 100 s: (0.6) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0Rack travel in mm : 6.1...6.3 Test oil Del.quantity cm3/: 1.6...2.0 : 38...42 inlet temp. °C 100 s: (1.3...2.2) cm3 : 0.3Spread Overflow valve 100 s: (0.5) : 1 419 992 198 (B) Setting of injection pump Inlet press., bar: 1.50 with governor Test nozzle holder : 1 688 901 101 GUIDE SLEEVE TRAVEL assembly rpm : 1350 1st speed : 10.00...10.40 travel mm Openina 2nd speed : 900 : 207...210 rpm pressure, bar : 6.40...6.60 travel mm 3rd speed : 480 rpm Orifice plate : 3.10...3.70 travel mm : 0,6 diameter mm : 300 4th speed rom : 1.40...1.80 travel mm : 1 680 750 008 Test Lines GUIDE SLEEVE POSITION Control-lever position Outside diameter Degree: -1 x Wall thickness rpm : 1380 : 6.00x2.00x600 Speed x Length mm Rack travel in mm: 15.20...17.80 (A) Injection pump setting values FULL LOAD DELIV. AT FULL LOAD STOP Insp. values in parentheses Set equal delivery quant. 1st version per values \_\_\_\_ rpm : 1300 Speed

Aneroid pressure h: 900 Del.quantity : 124.0...126.0

Del.quantity : 124.0...128.0)

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Rack travel in m: 9.80...9.90 : 3.50 cm3 Spread 2nd pressure hPa : 180 1000 : (6.00) Rack travel in m: 10.80...11.10 3rd pressure hPa : 900 RATED SPEED Rack travel in m: 13.00...13.10 1st version START CUT-OUT Control lever position degrees: 116...124 Speed 1/min : 240 (250) Testing: FUEL DELIVERY CHARACTERISTICS 1st rack travel in: 12.00 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 Speed rpm : 1450...1480 4th rack travel in: 1550 1st version Aneroid pressure h: 900 : 800 Speed Speed rom rpm : 0.00...1.00Del.quantity cm3/: 118.0...121.0 1000 s: (115.5...123.5) Spread cm3: 5.00 1000 s: (7.0) LOW IDLE 1 Control lever position degrees: 66...74 Aneroid pressure h: -Setting point w/out bumper spring : 500 Speed mc;n man. Del.quantity cm3/: 77.0...79.0 1000 s: (75.0...81.0) Rack travel in mm: 6.2 Testina: Speed rpm : 200 Minimum rack trave: 7.50 BREAKAWAY : 300 rpm Speed Rack travel in mm : 6.10...6.30 1st version 1mm rack travel less than CONSTANT REGULATION full load rack tr: 12.00 rpm : 330...500 Speed rpm : 1340...1350 Speed TORQUE CONTROL STARTING FUEL DELIVERY Torque control curve - 1st version st speed rpm : 1300 Rack travel in m: 13.00...13.10 1st speed Speed rpm : 100 Del.quantity cm3/ : 30.0...90.0 1000 s: (77.0...93.0) 2nd speed rpm : 800 Rack travel in m: 12.00...12.20 rpm : 500 3rd speed Rack travel in mm : 19.00...21.00 Rack travel in m: 10.30...10.50 4th speed rpm : 1000 LOW IDLE Rack travel in m: 12.40...12.70 5th speed rpm : 400 Rack travel in m: 9.90...10.20 rpm : 300 Rack travel in mm : 6.10...6.30 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3 : 3.50 1000 s: (5.50) Aneroid/Altitude Compensator Test 1st version Remarks: Setting : 1300 Speed rpm hPa Pressure Start-of-delivery blocking 46.5° : 9.60...9.70 Rack travel mm before start of delivery of cylinder 1 Measurement 1/min: 1300 Speed 1st pressure hPa : 130

N25

Note remarks

Test sheet : FIA 8,1 D Edition : 18.09.91 Replaces : 06.91 Test oil : ISO-4113

Combination no. : 0 403 446 249

Injection pump

Pump designation : PES6MW100/720RS1197

EP type number : 0 413 406 185

Governor

Governor design. : RQV325...1350MW109K

Governer no. : 0 420 083 997

Customer—spec. information Customer : IVECO-FIAT

Engine : 8060.45.6000

1st version kW : 169.0 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Opening .

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10 : (3.95...4.15)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

BASIC SETTING

1st speed rpm: 1350

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 10.0...10.2

100 s: (9.8...10.4)

Spread cm3: 0.3

100 s: (0.6)

2nd speed rpm : 325.0 Rack travel in mm : 7.7...7.9 Del.quantity cm3/ : 2.5...2.9

100 s: (2.2...3.1)

Spread cm3 : 0.3 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400

travel mm : 10.00...10.40

2nd speed rpm : 825

travel mm : 4.90...5.10

3rd speed rpm: 400

travel mm : 2.90...3.50

4th speed rpm : 325

travel mm : 1.50...1.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Spread

Speed rpm: 1350 Aneroid pressure h: 850

Del.quantity : 100.0...102.0 1000 : (98.0...104.0)

cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 117...125

Del.quantity cm3/: 100.0...103.0 1000 s: (97.5...105.5) Testina: 1st rack travel in: 13.00 Spread rpm : 1410...1420 Speed 2nd rack travel in: 4.00 Speed rpm : 1515...1545 4th rack travel in: 1600 Speed rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 78...86 Setting point w/out bumper spring Speed rpm Rack travel in mm: 7.8 Testing: Speed rpm **BREAKAWAY** Minimum rack trave: 10.00 Speed rpm : 325 Rack travel in mm : 7.70...7.90 1st version TORQUE CONTROL Torque control curve - 1st version rpm : 1350 Speed 1st speed Rack travel in m: 14.00...14.10 and speed rpm : 1200 Rack travel in m: 13.60...13.80 2nd speed 3rd speed rpm : 1000 Rack travel in m: 13.20...13.50 4th speed rpm : 700 Rack travel in m: 13.30...13.50 LOW IDLE Aneroid/Altitude Compensator Test 1st version Setting : 500 Spread Speed rpm Pressure hPa : ~ : 11.20...11.30 Rack travel mm Remarks: Measurement 1/min: 500 Speed 1st pressure hPa : 450 Rack travel in m: 11.70...11.80 2nd pressure hPa : 650 Rack travel in m: 12.80...13.10 3rd pressure hPa : 850 Rack travel in m: 13.30...13.50 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 850

cm3 : 5.001000 s: (7.0) Aneroid pressure h: 850 : 1000 rpm Del.quantity cm3/: 100.5...103.5 1000 s: (98.0...106.0) Aneroid pressure h: 850 Speed rpm : 700 Del.quantity cm3/ : 101.5...104.5 1000 s: (99.0...107.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 77.5...79.5 1000 s: (75.5...81.5) 1mm rack travel less than full load rack tr: 13.00 rpm : 1410...1420 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 65.0...85.0 1000 s: (62.0...88.0) Speed rpm : 325 Rack travel in mm : 7.70...7.90 Del.quantity cm3/: 25.0...29.0 1000 s: (22.5...31.5) cm3 : 3.501000 s: (5.50)

Speed

: 1200

man